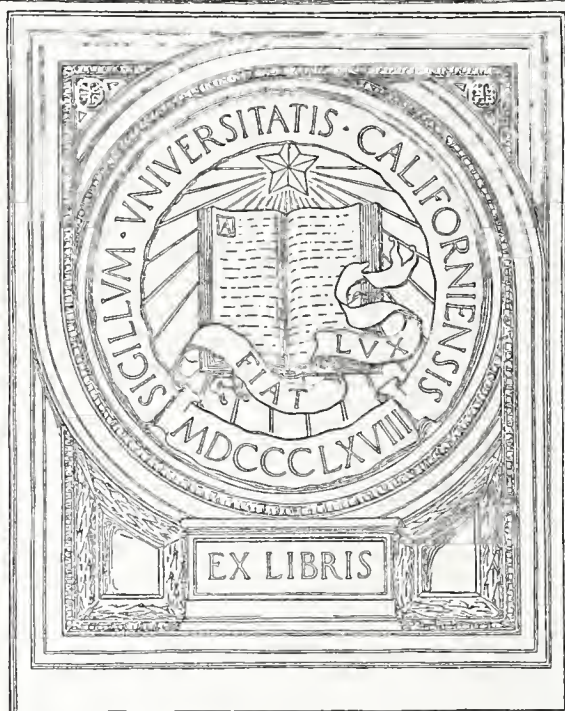



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JUNE 1960

THE JOURNAL OF THE ARKANSAS MEDICAL SOCIETY

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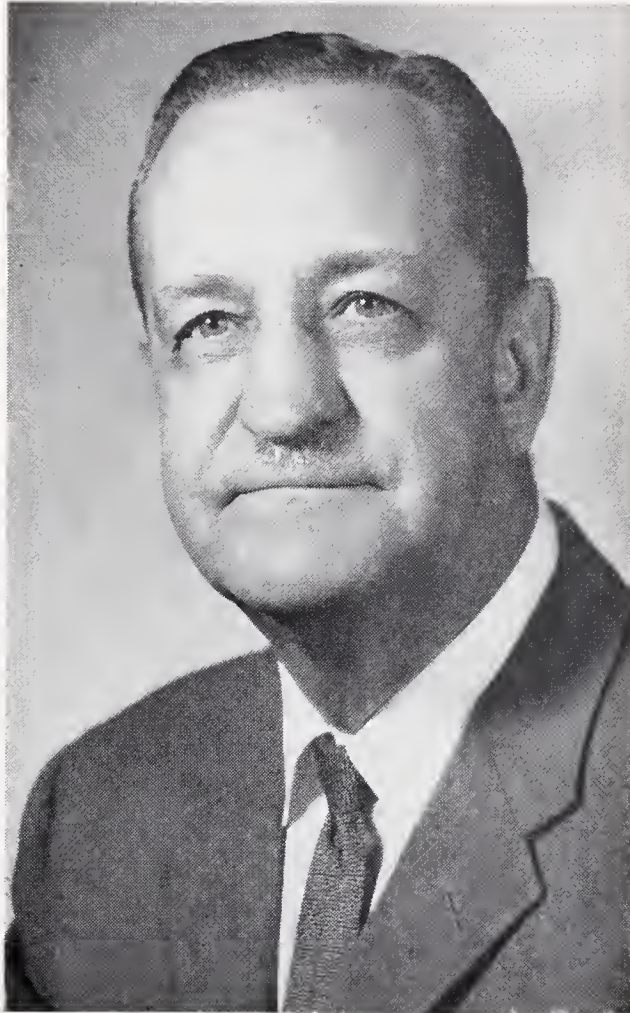
FROM PARKE-DAVIS...A NEW ORAL ANTIBIOTIC WITH EFFECTIVE ANTIBACTERIAL & ANTIAMEBIC ACTIONS

"THE FORTUNATE COMBINATION OF HIGH ANTIAMEBIC AND ANTIBACTERIAL ACTIVITY AND LOW ORAL TOXICITY MAKES PAROMOMYCIN UNIQUE AMONG THE AVAILABLE DRUGS AND SUGGESTS THAT IT SHOULD BE A USEFUL THERAPEUTIC SUBSTANCE."¹

● **IN INFECTIOUS DIARRHEAS**²⁻⁵ Because it is effective against gram-negative pathogens, HUMATIN has proved especially valuable in infectious diarrheas, most of which are caused by bacilli of the gram-negative group. In 221 patients with severe diarrhea, 85 per cent obtained rapid remission of symptoms with HUMATIN, and stools cleared quickly of pathogens.² Results in *Shigella* and *Salmonella* enteritis,⁵ and in infantile diarrheas of mixed etiology³ have been uniformly good.

● **IN INTESTINAL AMEBIASIS**^{2, 5-8} HUMATIN is unusually effective in clearing all phases of intestinal amebiasis;⁵ to date, more than 700 patients have been treated successfully with HUMATIN in all parts of the world. Since HUMATIN is not appreciably absorbed from the gastrointestinal tract it is not effective against extraintestinal forms of amebiasis.

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J. J. MONFORT, M. D.

Batesville

PRESIDENT

Arkansas Medical Society

1960-1961

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The JOURNAL

OF THE ARKANSAS MEDICAL SOCIETY

PUBLISHED MONTHLY UNDER DIRECTION OF THE COUNCIL

Volume 57

JUNE, 1960

Number 1

84th Annual Session

Arkansas Medical Society

PRESIDENT'S ADDRESS*

JAMES M. KOLB**

Members of the Arkansas Medical Society and Honored Guests:

It gives me great pleasure to welcome you to the Eighty-Fourth Annual Session of the Arkansas Medical Society, meeting here in Pine Bluff for the first time in 51 years. It was in 1909 when our society met here last, before many of our members first breathed the "Breath of Life".

Pine Bluff, Jefferson County Medical Society, and your local host committee, headed by our immediate past-president, Louis Hundley, have arranged a wonderful program for your entertainment. The Ladies Committee, headed by his lovely wife, Mrs. Jeane Hundley, has arranged a program for our wives, beyond all expectations.

I would like to call attention to the excellent scientific program arranged by the Program Committee, headed by John Wood, Mena. They have done a superb job, which has taken many, many hours of hard work. I recommend that you participate in the program as much as possible. It will be time well spent.

I wish to congratulate the Woman's Auxiliary to the Arkansas Medical Society, and their president, Mrs. Dorothy Gray. She has done a wonderful job,

traveling all over Arkansas many times, carrying the "torch of truth" concerning the "Forand Bill, Socialism and Government Encroachment on the Private Practice of Medicine" to Auxiliary Meetings, P.T.A. Associations and civilian groups of various kinds.

When I addressed you last April at the annual banquet in Fort Smith, at the time of my inauguration, I gave you a three-point program for the coming year. I am pleased to tell you that all three are now in operation. **First**, that more interest be aroused amidst our membership, with more than ten per-cent of the 1,250 members we have, taking active part in our society's business. We have made great strides this year, but still need to go further in the years to come. **The second point**, a state-wide Blue Cross-Blue Shield plan for members of the Arkansas Medical Society and their office employees, with major medical coverage. This plan went into effect last Summer, and if any of you do not have it, I recommend it to you. **Third**, the formation of the "Medical Education Foundation of Arkansas". This has been completed, the members of the board have been elected, including the non-medical members. They are now open for business, and will welcome your gifts, bequests, or anything of a monetary nature.

*Read by Dr. C. R. Ellis of Malvern, due to Dr. Kolb's being hospitalized.

**Clarksville.

PRESIDENT'S ADDRESS

Our committees have been very active. Their reports are printed in the March issue of the Journal. I recommend you study them, if you have not already done so. May I call your attention to a few of them that have been especially busy.

The Insurance Committee, under the direction of Sam Jameson, has made available to us a Group Life Insurance Policy, which went into effect August 1, 1959. Also, through this committee, the H.I.P. Council of Arkansas was formed three years ago. It is composed of three members of the Arkansas Hospital Association, three members of each of the five segments of the insurance business, and three physicians. This is the only commission of its kind in the nation. Through regular meetings of this H.I.P. Council, uniform claim blanks have been developed. You received a booklet in the mail a short time ago, showing these uniform claims. Friction between the Hospitals, Insurance Industry, and Physicians is at an all-time low in Arkansas now, due to the work of this council. This is not only my own opinion, but is shared by the Health Insurance Council of America.

The Special Fee Committee, headed by Fount Richardson and composed of thirty members, representing all branches of the practice of medicine, has had many long

and weary sessions. They have had five schedules to consider: Medicare; Home-town care for Veterans; Rehabilitation; Regular Blue Shield; and Blue Shield for those over sixty-five years of age. They have accomplished much this past year, and still have problems ahead. Only the members of this committee will ever realize the effort they have put forth to try to help save the "Private Practice of Medicine".

The Rural Health Committee, headed by Ben Saltzman, has done its usual good job. Their state meeting on "Rural Health" last July 30 and 31 was, in my opinion, their best yet. It was better attended, more interesting and the crowning event was the presence and speech of Dr. Louis Orr, President, American Medical Association, who delivered a stirring message in his usual manner.

The Committee on Aging has been very busy, and is responsible for the establishment of a Joint Council for Medical Care, composed of representatives of Registered Nurses, Practical Nurses, Nursing Home Operators, Hospital Administrators and Physicians. The A.M.A. is sponsoring this on a national scale. Arkansas was one of the first councils to be organized and works closely with the "Governor's Council on Aging" preparatory to



Wright Hawkins receiving past-president's plaque of appreciation for James M. Kolb from the newly sworn-in President J. J. Monfort.

PRESIDENT'S ADDRESS

the "White House Council on Aging" to be held in Washington next January.

Our Public Relations Committee, along with the Arkansas Academy of General Practice, sponsored educational booths at the State Fair and at the Annual Session of the Arkansas Educational Association in Hot Springs. They are planning to do this again this year.

I would like to continue and report on each and every committee, but time does not permit this. May I congratulate each member of each committee for a job well done.

I do not share the opinion of the editor of an article in recent edition of a national magazine, namely, that to be from Arkansas is a "stigma hard to overcome", and an admission of inferiority.

I am proud of my native state. I could have left her long ago, had I so desired. We enjoy the honor of two distinguished senators in the United States Senate, both heading major committees and enjoying enviable positions in world politics. In the House of Congress, no other state in the Union has as many important committee chairmen as does Arkansas, with five major committees being chairmaned by our distinguished sons. Our own member, Dale Alford, having only been in Washington just fifteen months, is making a record we are all proud of. His appearance before the House of Delegates, A.M.A., at our breakfast in Atlantic City last June opened the eyes of many doctors as to our true worth in Arkansas.

In the Business World, I can name you individuals, who were born, reared and educated in Arkansas, and whose success has been phenomenal at home and abroad.

We do not have to go out of our own profession. The Arkansas Academy of General Practice, with less than two hundred members, of a total of twenty-six thousand, has supplied two national presidents in the thirteen years of its existence, Bob Robins and Fount Richardson. With only twelve hundred fifty members out of a total of one hundred seventy-five thousand, we have one of the nine trustees of A.M.A. Bob Robins has become known as "Mr. Arkansas Medical Society Ambassador". Besides serving as President of the American Acad-

emy of General Practice, he has been vice president of the A.M.A., and just recently was elected vice president of the American Association of Railway Surgeons. We have more members on committees of the American Medical Association, the Southern Medical Association and other special groups, than ever before. We are at an all-time high in our standing in the national scene, as well as politically and in the business world.

This opinion is also shared by Dr. F. J. L. Blasingame, from whom the following letter was received:

American Medical Association
535 North Dearborn Street
Chicago 10, Illinois
April 13, 1960

James M. Kolb, M. D.
President
Arkansas Medical Society
Box 472
Clarksville, Arkansas

Dear Dr. Kolb:

On the occasion of the 84th Annual Meeting of the Arkansas Medical Society, I want to take this opportunity to express the sincere appreciation of the staff of the American Medical Association, and my own personal appreciation to your State Society, for the splendid program which has been carried out in the past few months in the field of national legislation.

In the current struggle to forestall Congressional action in the field of compulsory health insurance, the Arkansas Medical Society has occupied one of the key positions in the entire nation. With the Chairman of the House Ways and Means Committee coming from your state, you have faced a tremendous challenge. We feel that the Arkansas Medical Society has responded to this challenge in a magnificent manner.

I hope that, on the occasion of your Annual Session, you will express our feelings to the officers, the Board of Trustees of your State Society; the officers and members of your Committee on Legislation; the staff of your State Society, and, if possible, the officers of the county societies, for their splendid cooperation in presenting Medicine's view on the problems of the aging to your Congressional Delegation in Washington, and to the public as a whole in the State of Arkansas. Also, please accept our best wishes for a most successful Annual Meeting.

Yours sincerely,

/s/ F. J. L. Blasingame, M. D.
F. J. L. Blasingame, M. D.

This report would not be complete without a brief statement of the activities of your president this past year. I have visited all of the councilor districts, except the third district. I was not informed as to their meeting. Most of the districts have been visited twice or more.

PRESIDENT'S ADDRESS

The major part or all of eighty-five days have been spent away from my office, attending medical meetings, committee meetings, speaking to allied professions, etc., with more than fifteen thousand miles driven inside the state. This does not include fifty-one days, with eleven trips made outside the state, as your delegate to the House of Delegates of the A.M.A.; and the workings of one of its major committees, which I fell heir to upon the election of Bob Robins to Trustee.

Yes, we have made mistakes, we have left stones unturned; we would do some

things differently if it was to do over again. Please don't criticize us too severely, but put your shoulder to the wheel and start pushing more of the load than you have been doing. Your officers are always willing and ready to share with you, the work, as well as the play.

I appreciate the great honor you have given me by allowing me to serve as your president. Words are inadequate to express my deepest gratitude. I have tried to realize fully the responsibility that goes with this great honor and to serve you to the best of my ability.

PROCEEDINGS

84th Annual Session

ARKANSAS MEDICAL SOCIETY

Pines Hotel, Pine Bluff

April 17-20, 1960

FIRST MEETING HOUSE OF DELEGATES 4:30 p.m., April 17th, 1960

Speaker C. Lewis Hyatt called the meeting to order in the Ballroom of the Pines Hotel, Pine Bluff, at 4:30 p.m. He then requested H. W. Thomas of Dermott to give the invocation.

Secretary Shuffield called the roll of delegates. The following delegates and members seated as delegates by action of the House were present:

BAXTER, Ben N. Saltzman; BRADLEY, George F. Wynne; CHICOT, Major E. Smith; CLARK, Eli Gary; CONWAY, Gastor B. Owens; CRAIGHEAD-POINSETT, Eldon Caffery, J. H. McCurry, Joe Verser; CRITTENDEN, Glenn P. Schoettle; CROSS, K. E. Beaton; DESHA, H. T. Smith; DREW, Lewis Hyatt; FAULKNER, C. A. Archer, Jr.; FRANKLIN, C. C. Long; GARLAND, Ralph Patterson; GRANT, Miles Kelly; HEMPSTEAD, James W. Branch; HOT SPRING, C. R. Ellis; INDEPENDENCE, O. J. T. Johnston; JEFFERSON, Charles Reid; H. L. Wine-land; MILLER, Karlton Kemp; OUACHITA, L. E. Drewery; PULASKI, Edwin F. Gray, Guy R. Farris, James L. Smith, Thomas G. Johnston, Jerome Levy, Edgar Easley, William S. Orr, Gordon P. Oates, William A. Snodgrass, James W. Headstream, Joseph Norton; SEBAS-TIAN, D. W. Goldstein, Wright Hawkins, A. S. Koenig; SEVIER, R. C. Dickinson; UNION, Kenneth R. Duzan; WASHINGTON, Stanley Applegate, Coy Kaylor; WOODRUFF, Fay B. Mill-
wee. Also present were Councilors C. A. Archer, Thomas E. Townsend, J. L. Dedman, Jr., K. E. Beaton, Ross Fowler, Stanley Applegate, H. W. Thomas, Hugh Edwards, Robert Jones, King Wade, Jr., Bill Dave Stewart, J. W. Kenne-
dy, C. C. Long, L. A. Whittaker, and John Wood; Past Presidents Louis Hundley, T. Duel Brown, Fount Richardson, R. B. Robins, and W. R. Brooksher.

At the request of Speaker Hyatt, Dr. Louis Hundley made an announcement

concerning the absence of President James M. Kolb due to hospitalization and requested that the members of the House stand for a moment of silent prayer for Dr. Kolb's early recovery.

Speaker Hyatt introduced honored guests —Mrs. Frank Gastineau, President of the Woman's Auxiliary to the American Med-ical Association and Mrs. John Chenault, President of the Woman's Auxiliary to the Southern Medical Association — who spoke briefly bringing greetings from their respective organizations. Also in-troduced were Mrs. Paul Gray, President of the Woman's Auxiliary to the Arkan-sas Medical Society, and Mrs. C. C. Long, President-Elect of the Woman's Auxiliary to the Arkansas Medical Society.

Speaker Hyatt then called for a report from the Credentials Committee.

Dr. Whittaker, Chairman of the Cre-
dentials Committee, reported that cre-
dentials of the delegates present had been
examined, found correct, and that a quo-
rum was present.

Upon the motion of Snodgrass and Shuffield, the House adopted as correct the minutes of the 83rd Annual Session as published in the June 1959 issue of the Journal of the Arkansas Medical Society.

Chairman of the Council Joe Verser moved adoption of the report of the Coun-
cil of the Arkansas Medical Society as
published in the March 1960 issue of the
Journal of the Arkansas Medical Society.
Upon second by Eli Gary, the House voted
adoption of the report.

Verser then presented to the House
three items referred to it by the Council:

PROCEEDINGS

A. Recommendation that Arkansas give a breakfast for all delegates and officers of the AMA at all future June meetings of the AMA. Upon motion of Saltzman, second by Long, the Council voted in favor having such breakfasts.

B. Proposal that State Medical Society dues be raised \$5.00 to be earmarked for the Medical Education Foundation for Arkansas. Upon the motion of Oates and Drewery, the Council approved such increase for that specific purpose.

C. Letter from the Medical and Chirurgical Faculty of the State of Maryland outlining their position on veterans' medical care. Upon the motion of Applegate and Whittaker, the House voted to support Maryland's stand in this matter.

PUBLISHED committee reports were referred to either Reference Committee Number One (Randolph Ellis, Chairman, Ben N. Saltzman, H. T. Smith) or to Reference Committee Number Two (Louis K. Hundley, Chairman, William A. Snodgrass, Roy I. Millard). Speaker Hyatt called for supplementary committee reports.

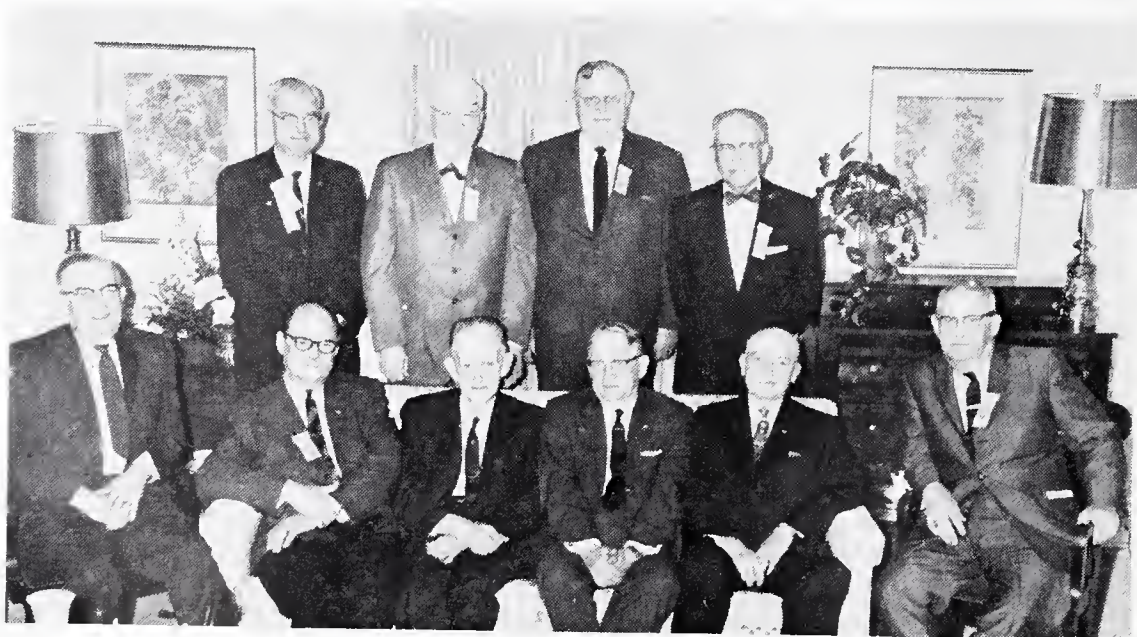
Elvin Shuffield advised that he had a report for his Committee on Medical Legislation and moved that the House go into Executive Session to hear the report. Upon second by Verser, the House so voted and all guests were requested to leave the room. The report was referred to the reference committee and, upon the motion of Townsend and Saltzman, the guests were invited to return to the meeting.

Committee reports were presented by Randolph Ellis, Chairman of the Committee on Liaison with the Welfare Department; Louis Hundley, Chairman of the Woman's Auxiliary Advisory Committee; T. E. Townsend, Acting Chairman of the Sub-Committee on Liaison with Blue Cross-Blue Shield; L. E. Drewery, Chairman of Committee on Aging; and Joseph Norton, Chairman of the Committee on the American Medical Education Foundation. All reports were referred to Reference Committees.

Joseph Norton presented a resolution from the Pulaski County Medical Society opposing the adoption of Amendment 52 to the Constitution of the State of Arkansas. Gordon Oates presented a resolution from the Pulaski County Medical Society recommending an amendment to Section 1 A of Chapter VIII of the State Society Constitution.

L. E. Drewery presented a resolution from the Ouachita County Medical Society recommending the appointment of a committee on medical indigency. All resolutions were referred to reference committees.

Speaker Hyatt announced that a vacancy occurs on the Arkansas State Medical Board from the Fourth Congressional District and indicated time and place of meet-



Past Presidents' Breakfast at the home of Dr. and Mrs. Louis Hundley Wednesday, April 20th, 1960. Standing, Louis Hundley, Fount Richardson, Euclid Smith, H. King Wade, Sr.; seated, W. R. Brooksher, R. B. Robins, H. T. Smith, O. J. T. Johnston, W. H. Mock, and R. C. Dickinson.

PROCEEDINGS

ing of congressional district members for election to fill vacancy.

Joseph Norton of Pulaski County called attention of members of the House to article "The Service Contract" by Dr. Frank Kumpuris, which was available in mimeographed form for all interested members. A. S. Koenig of Sebastian County spoke briefly concerning the article by Kumpuris and urged approval of the "Over 65" plan which is to be presented to the House for consideration.

Reference Committee Chairmen Randolph Ellis and Louis Hundley announced committee hearings and requested all interested persons to be present.

Speaker announced that the selection of the nominating committee for election of Society officers would be held. Delegates from the various councilor districts held meetings on the floor and selected the nominating committee as follows:

First District, Joe Verser; Second District, O. J. T. Johnston; Third District, Fay B. Millwee; Fourth District, H. T. Smith; Fifth District, L. E. Drewery; Sixth District, R. C. Dickinson; Seventh District, J. W. Kennedy; Eighth District, Joseph Norton; Ninth District, D. L. Owens; Tenth District, C. C. Long.

The House adjourned at 6:00 p.m.

SUNDAY NIGHT

The Jefferson County Medical Society entertained visiting physicians and their wives at an Open House at the home of Dr. and Mrs. J. Clyde Hart on Sunday night.

FIRST GENERAL SESSION

Monday, April 18th, 1960, 8:30 a.m.

Ballroom, Pines Hotel, Pine Bluff

The meeting was called to order at 8:30 a.m. by First Vice President Wright Hawkins of Fort Smith. The Invocation was given by The Reverend T. P. Devlin, Rector of Trinity Episcopal Church in Pine Bluff. C. R. Ellis of Malvern read Dr. James M. Kolb's "President's Address" as reported on page one. The scientific session, with Dr. Hawkins presiding, proceeded as follows:

"Tired Blood," Albert Hagedorn, Medical Section Mayo Clinic, Rochester, Minnesota

"Systemic Treatment of Fungous Infections," Harvey Blank, Professor of Dermatology, University of Miami Medical School, Miami, Florida

"Newer Concepts in Treatment of Arteriosclerotic Occlusive Disease," Denton A. Cooley, Department of Surgery, Baylor University College of Medicine, Houston, Texas

"Mitral Valvular Disease—The Question of Surgery," Carleton Chapman, Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Texas

"Consultation Service of the Anesthesiologist," C. R. Stephen, Professor of Anesthesia, Duke University School of Medicine, Durham, North Carolina

SECOND GENERAL SESSION

Monday, April 18th, 1960, 12:30 p.m.

Ballroom, Pines Hotel

John W. Dodson, Second Vice President, presided, presenting the film "M.D.-U.S.A." and the following scientific program:

"How to Organize Your Finances—Professional and Personal," Mr. Mark Myers, Dental-Medical Economics, Dallas, Texas

"Osteoarthritis of the Hip," Harry D. Morris, Department of Orthopedics, Ochsner Clinic, New Orleans, Louisiana

"Present Thoughts on Primary Glaucoma of Interest to the General Physician," George Haik, Professor of Ophthalmology, Louisiana State University School of Medicine, New Orleans

"Virilizing Tumors of the Ovary," Edmund R. Novak, Baltimore, Maryland

"Obstructive Diseases of the Urinary Tract in Children", Robert Lich, Jr., Professor and Chairman, Department of Urology, University of Louisville School of Medicine, Louisville, Kentucky

MONDAY EVENING

A cocktail party and buffet dinner was held at the Trio Club on Monday night, April 18th, with music by the Lamplighter Trio. 361 members and guests enjoyed the food and the environment furnished by the ultramodern Trio Club.

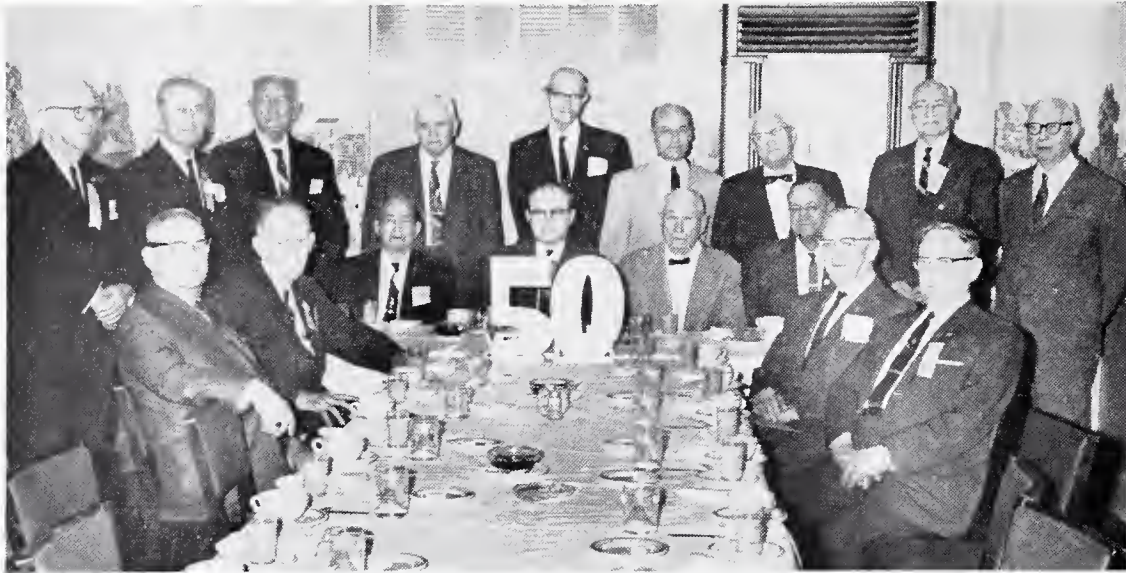
FINAL GENERAL SESSION

Tuesday, April 19th, 1960, 9:00 a.m.

Ballroom, Hotel Pines

The Final General Session was called to order by Third Vice President D. L. Owens at 9:00 a.m. and invocation was given by the Right Reverend Monsignor Joseph Gallagher of St. Joseph's Parish,

PROCEEDINGS



The Annual Fifty Year Club Breakfast Tuesday.



H. L. Wineland receives the King Wade, Sr., Golf Trophy from J. Clyde Hart, Tournament Chairman.



The buffet at the Trio Club Monday night was attractive and well-attended.

Pine Bluff. The scientific program followed:

"Current Immunization Procedures—Fact, Fancy and Fiction", Blair Batson, Chairman of Pediatrics Department, University of Mississippi Medical Center, Jackson, Miss.

"A Radiologist's Evaluation of the Hazards of Radiation Exposure in Diagnostic Radiology and Radioactive Fall Out," Isadore Meschan, Professor and Head of the Department of Radiology, The Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, N. C.

"The Surgical Management of Carcinoma of the Colon," John Waugh, Surgical Section, Mayo Clinic, Rochester, Minnesota (Sponsored by the Arkansas Division, American Cancer Society).

"Chemistry and Clinical Acumen in the Differential Diagnosis of Jaundice," J. R. Snavely, Professor and Chairman, Department of Medicine, University of Mississippi Medical Center, Jackson, Miss.

MEMORIAL SERVICE

First Vice President Wright Hawkins presided at a Memorial Service honoring members who had passed away during the year. The invocation was given by the Reverend John B. Hefley, Pastor, Lakeside Methodist Church, Pine Bluff. Mrs. T. Duel Brown, Auxiliary Chaplain, read the names of the deceased members of the Auxiliary:

Mrs. Robert Jones, Little Rock
Mrs. J. C. Land, Walnut Ridge
Mrs. J. R. Lynn, Hazen
Mrs. George H. Martindale, Hope
Mrs. Robert Caldwell, Little Rock
Mrs. E. D. McKelvey, Paragould

Vice President Hawkins read the names of the deceased members of the Society:

C. E. Benefield, Fort Smith, August 6, 1959
Charles Bloom, West Fork, April 12, 1959
Oscar L. Bone, Newark, May 19, 1959
William Pate Cooksey, Magnolia, November 23, 1959
James O. Cotton, Leslie, October 12, 1959
Marion S. Craig, Sr., Batesville, August 20, 1959
T. J. Cunningham, Sr., Pine Bluff, December 8, 1959
Rolland F. Darnall, Little Rock, July 20, 1959
Robert L. Dawson, Bee Branch, May 22, 1959
Dewell Gann, Jr., Benton, January 9, 1960
John F. Gulledge, Siloam Springs, May 17, 1959
Ottis G. Hirst, Prescott, October 30, 1959
Austin R. Hederick, Booneville, April 27, 1959
Herschell M. Kitchens, Waldo, May 21, 1959
Allie C. Kolb, Little Rock, October 30, 1959
James Newbill, Little Rock, May 11, 1959
James O. Rush, Forrest City, December 24, 1959
Robert L. Saxon, Little Rock, August 9, 1959
Adonis Smith, Hope, April 22, 1959
Francis S. Tarleton, Hot Springs, January 5, 1960

E. O. Underwood, Waveland, March 21, 1960
Herbert S. Watson, Earle, July 22, 1959
Robert H. Willett, Jonesboro, December 2, 1959
J. G. Wilson, Keo, December 8, 1959
Thomas Wilson, Wynne, May 7, 1959
James T. Wortham, Little Rock, February 4, 1960

The Memorial Address was given by Dr. Charles A. Taylor of Batesville and Mrs. Paul Gray of Batesville sang "Come Unto Him" from The Messiah by Handel. Benediction was pronounced by Mr. Hefley.

TUESDAY AFTERNOON

April 19th

There was no general session on Tuesday afternoon, April 19th. Specialty meetings were held as follows:

The Eye, Ear, Nose, and Throat Section met in Room 326 of the Pines Hotel with Max F. McAllister, Mercer Lynch, Joseph Bailey, William Carabelle, Phillip P. Ellis and George Haik as speakers.

Arkansas Society of Internal Medicine met for luncheon and a business meeting in the Colonial Room of the Pines Hotel with Robert Snavely, Ben Price, Careleton Chapman, and Charles Wilkins as speakers.

The Section on Pediatrics met for luncheon and a scientific program in Room 212 of the Pines Hotel.

Obstetricians and gynecologists met at the Embers Restaurant of the Pine Bluff Motel with presentations by guest speaker Edmund R. Novak of Baltimore.

Drs. Robert McDonald and Charles Anderson entertained the Radiology Section with luncheon at the Anderson Residence. The luncheon was followed by a scientific session.

The Section on Urology met in Room 230 of the Hotel for luncheon and a scientific session with Dr. Robert Lich of Louisville as guest.

The Anesthesiologists met for a scientific program in the Ballroom of the Pines Hotel. The program consisted of a discussion by Dr. C. R. Stephen of Durham, N. C. and Dr. C. W. Shafer of Little Rock.

PLANTATION DINNER, DANCE AND INSTALLATION OF PRESIDENT ● TRIO CLUB

Tuesday Night, April 19th

The Trio Club furnished a beautiful setting for the Annual President's Banquet and Dance on Tuesday night. Tables were candle-lit and decorated with flowers. The walls and the speakers' stand were adorned with floral caducei. While dress at the affair was optional, those officers and guests seated at the head table wore formal attire. Louis

PROCEEDINGS



President J. J. Monfort congratulates William A. Snodgrass on his election as President-elect, Arkansas Medical Society, 1960-61.



The Executive Committee of the Council, Arkansas Medical Society, 1960-61, left to right: Elvin Shuffield, Secretary; J. J. Monfort, President; William A. Snodgrass, President-elect; Joe Verser, Chairman of the Council.

Hundley of Pine Bluff, Chairman of the local arrangements Committee, served as master of ceremonies. Invocation was given by the Reverend T. P. Devlin of the Trinity Episcopal Church in Pine Bluff.

At the opening of the dinner, Dr. Hundley announced that Dr. James M. Kolb, President of the Society, had been hospitalized with a heart attack only a few days before the meeting and called for a moment of silent prayer for the early recovery of Dr. Kolb.

Dr. J. Clyde Hart awarded the golf prizes as follows:

Dr. Ben Means, Little Rock, Low Gross; Prize: Golf cart

Dr. H. L. Wineland, Pine Bluff, Low Net, first flight; Prize: Umbrella

Dr. R. E. Glasscock, Pine Bluff, Low Net, Second Flight; Prize: Golf bag

Dr. D. E. White of El Dorado and Dr. B. E. Luck of Pine Bluff tied for first place in the Senior Division; Prizes: Dr. Luck, Wedge; Dr. White, Golf seat

Mrs. Sally Miller Perdue, "Miss Arkansas" of 1958, entertained by singing several numbers.

Dr. Wright Hawkins, First Vice President, administered the oath of office to Dr. J. J. Monfort of Batesville, incoming president.

Dr. Monfort presented a plaque of appreciation to Dr. Kolb, which was received by Dr. Hawkins.

Dr. Monfort spoke briefly thanking the members of the Medical Society for electing him as president. Dr. Jimmie Lytle of Batesville came forward to present to Dr. Monfort, on behalf of the Independence County Medical Society, an inscribed gold wristwatch, commemorating Dr. Monfort's long service to medicine and the public.

The orchestra played for dancing until 1:00 a.m.

FINAL SESSION HOUSE OF DELEGATES

April 20, 1960

Speaker Hyatt called the House of Delegates to order at 10:00 a.m. on Wednesday, April 20th, in the Ballroom of the Hotel Pines, Pine Bluff. He requested Dr. C. R. Ellis of Malvern to give the invocation.

Secretary Shuffield called the roll of delegates. The following delegates and members seated as delegates by action of the House were present:

ARKANSAS, R. H. Whitehead, Sr.; ASHLEY, E. G. Gresham; BAXTER, Ben Saltzman; BOONE, A. R. Hammon, CHICOT, Major E. Smith; CLARK, K. W. Kennedy; CLEBURNE, J. C. Barnett; CRAIGHEAD-POINSETT, Eldon Caffery, Charles G. Swingle, Joe Verser; CRITTENDEN, Glenn P. Schoettle; DESHA, H. T. Smith; FRANKLIN, Wm. C. Hensley, GARLAND, Lon Reed, Ralph Patterson, Frank Burton; GRANT, Miles Kelly; GREENE-CLAY, A. E. Andrews; HEMPSTEAD, Lowell Harris; HOT SPRING, C. R. Ellis; HOWARD-PIKE M. H. Wilmoth; INDEPENDENCE, O. J. T. Johnston; JEFFERSON, Charles Reid, Louis K. Hundley; OUACHITA, L. E. Drewery; MILLER, J. Royston Brown; PULASKI, Guy R. Farris, James L. Smith, F. R. Buchanan, Jerome Levy, Edgar Easley, John Hundley, J. W. Downs, Gordon P. Oates, William A. Snodgrass, James W. Headstream, Joseph Norton, T. D. Brown; SEBASTIAN, Art Martin, A. S. Koenig, John Ben Stewart; UNION, G. D. Murphy; WASHINGTON, W. H. Mock, Fount Richardson; WHITE, Hugh Edwards; COUNCILORS Bill Dave Stewart, Robert Jones, George Burton, L. A. Whittaker, Ross Fowler, W. R. Brooksher, H. W. Thomas, T. E. Townsend, C. C. Long, Karlton Kemp; PAST PRESIDENTS R. C. Dickinson, H. T. Smith, R. B. Robins, PRESIDENT J. J. Monfort, FIRST VICE PRESIDENT Wright Hawkins, SECRETARY Elvin Shuffield.

Dr. Louie Whittaker, chairman of the Credentials Committee, reported that credentials of the delegates present had been examined, found correct, and that a quorum was present.

Jack Kennedy, Chairman of the Nominating Committee, presented the following report:

The Nominating Committee submits the following proposed slate of officers:

FOR PRESIDENT-ELECT:

William A. Snodgrass, Little Rock

William R. Brooksher, Fort Smith

FIRST VICE PRESIDENT:

John Wood, Mena

SECOND VICE PRESIDENT:

Kenneth R. Duzan, El Dorado

THIRD VICE PRESIDENT:

M. E. Blanton, Jonesboro

TREASURER:

Ben N. Saltzman, Mountain Home

SECRETARY:

H. Elvin Shuffield, Little Rock

SPEAKER OF HOUSE OF DELEGATES:

C. Lewis Hyatt, Monticello

VICE SPEAKER OF HOUSE OF DELEGATES:

John P. Price, Jr., Monticello

PROCEEDINGS



T. E. Rhine (center) of Thornton holds his Fifty Year Club Certificate while showing J. J. Monfort (right) the Medical Society program for the last meeting in Pine Bluff in 1909. J. H. McCurry, Secretary of the Fifty Year Club, is on the left.

COUNCILORS—

First District: Joe Verser, Harrisburg
Second District: Hugh R. Edwards, Searcy
Third District: K. E. Beaton, Wynne
Fourth District: H. W. Thomas, Dermott
Fifth District: J. L. Dedman, Jr., Camden

Sixth District: John Wood, Mena
Seventh District: H. King Wade, Jr., Hot Springs
Eighth District: Robert D. Jones, Little Rock
Ninth District: Ross Fowler, Harrison
Tenth District: L. A. Whittaker, Jr., Fort Smith

DELEGATES TO AMA:

Fount Richardson, Fayetteville
James M. Kolb, Clarksville

ALTERNATE DELEGATES TO AMA:

J. W. Kennedy, Arkadelphia
C. C. Long, Ozark

Upon the motion of Kennedy and Reed, the Report of the Nominating Committee was adopted by the House.

W. R. Brooksher requested that his name be withdrawn from the slate as a nominee for president-elect. John Wood of Mena requested that his name be withdrawn from the slate of nominees for the position of First Vice President. Speaker Hyatt called for nominations from the floor. Louis K. Hundley nominated C. R. Ellis of Malvern for the position of First Vice President. Motion was made by Townsend, second by Monfort, that nominations cease. Upon motion of Brooksher, second by Hundley, all officers were elected by acclamation.

Speaker Hyatt then requested George Burton and Ben Saltzman to escort the



Examining the Independence County Medical Society award to J. J. Monfort. Past Presidents R. C. Dickinson, H. T. Smith, T. D. Brown and Euclid Smith look at the wrist watch given President Monfort (right) at the President's banquet.

new president-elect, Dr. William A. Snodgrass to the platform. Dr. Snodgrass briefly thanked the House of Delegates for selecting him for the office.

Speaker Hyatt called for report of reference committees. Upon the motion of Shuffield and Monfort the House went into Executive Session to hear these reports.

REPORT OF REFERENCE COMMITTEE NUMBER ONE

C. R. Ellis, Chairman

Reference Committee Number One met in the Colonial Room of the Hotel Pines at 2:00 p.m. on April 18th with Committee members C. R. Ellis and Ben Saltzman present. The Committee transacted business as follows:

1. Considered the Report of the Cancer Control Committee and recommended approval as published in the March issue of the Journal of the Arkansas Medical Society.
2. Considered the report of the Industrial Health Committee and recommended approval as published in the March Journal.
3. Considered the report of the Mental Health Sub-Committee and approved the report as published but emphasized the great need for more personnel in the field of Mental Health and encouraged general practitioners to assume a greater part of the load until adequate personnel is available.
4. Considered the report of the Sub-Committee on Postgraduate Education and recommended approval as published.
5. Considered and approved the Report of the Committee on Hospitals.
6. Considered the report of the Advisory Committee to the Woman's Auxiliary to the Arkansas Medical Society; recommended approval and commended the Woman's Auxiliary to the Arkansas Medical Society for a successful year.
7. Considered and approved the Report of the Annual Session Arrangements Committee and commended them for an excellent program. As mentioned in the report, we approve their recommendation that two prospective speakers be selected at the meeting of each specialty group and that the chairman of the program committee be notified of those selections within two weeks following the annual meeting of the Arkansas Medical Society.

After reading item "7" above, Dr. Ellis requested the vote of the House on this matter, and moved adoption of the Committee's recommendation. Upon second by Monfort, the House so voted.

8. Considered and approved the report of the Committee for Senior Medical Day and rec-

ommend its continuation. We agree with the committee that we should have more participation by attendance of the officers and members of the Arkansas Medical Society.

9. Considered and approved the Report of the Traffic Safety Committee.
10. Considered and approved the Report of the Advisory Committee to the Arkansas Selective Service System.
11. The reports of the Professional Relations Committees of the First, Third, Sixth, Seventh, Eighth, and Tenth Councilor Districts were considered. We note very few cases being considered by these committees except Medicare. However, after hearing some discussion by the chairman of the Hospital-Physician-Insurance (HIP) Committee about complaints concerning insurance reports and fees, it is the recommendation of this committee that these complaints be reported to their Professional Relations Committees for consideration and action along with advice from the HIP Committee.

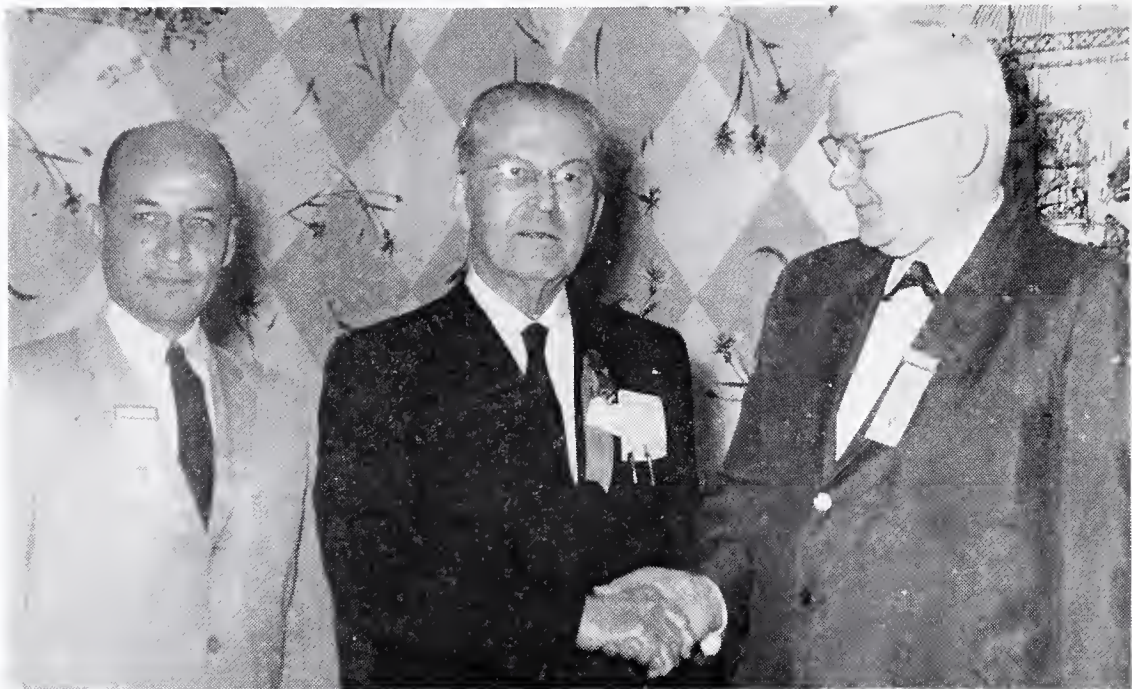
After reading item "11" above, Dr. Ellis moved adoption of this section of the Committee's report. Reed called for discussion. The recommendation concerning the Professional Relations Committees was explained by Monfort and Drewery. Upon second by Monfort, the House voted adoption of item "11".

12. Considered and approved the Report of the State Medical Board.
13. Considered the Report of the Arkansas State Board of Health and expressed our appreciation for a complete report. We recommend that all members of the Arkansas Medical Society read the report carefully and



Vice President Wright Hawkins administers oath of office to J. J. Monfort, Tuesday, April 19th, 1960, President's Banquet, Pine Bluff.

PROCEEDINGS



W. T. Lowe of Pine Bluff (center) receives honorary membership in Southern Medical Association, presented by Fount Richardson (right). Mr. Paul Schaefer (left) Executive Secretary, Arkansas Medical Society, received associate membership in Southern Medical Association at the same breakfast.



ARKANSAS MEDICAL SOCIETY OFFICERS, April 20, 1960

Standing, left to right: Bill Dave Stewart, Little Rock; H. W. Thomas, Dermott; K. E. Beaton, Wynne; L. A. Whittaker, Fort Smith; J. L. Dedman, Camden; Ross Fowler, Harrison; Hugh Edwards, Searcy; J. W. Kennedy, Arkadelphia; Robert Jones, Little Rock; T. E. Townsend, Pine Bluff; John Wood, Mena; Councilors.

Seated: Elvin Shuffield, Little Rock, Secretary; Randolph Ellis, Malvern, First Vice President; J. J. Monfort, Batesville, President; William A. Snodgrass, Little Rock, President-elect; Joe Verser, Harrisburg, Chairman of the Council; Lewis Hyatt, Monticello, Speaker of the House of Delegates; Mr. Paul Schaefer, Executive Secretary.

note statistics in it, some of which are quite revealing.

14. Considered and approved the Report of the Committee on Legislation and expressed appreciation for the good work done by the Legislative Committee since the last meeting.
15. Considered the proposed amendment to the By-Laws as suggested by the Pulaski County Medical Society and referred it to the Committee on Constitutional Revision.
16. Considered a resolution presented by the delegation from the Pulaski County Medical Society regarding Amendment 52 to the Constitution of the State of Arkansas. We, as a committee, report this back for open discussion on the floor of the House of Delegates of the Arkansas Medical Society.

At this time, Chairman of Reference Committee Number One, Randolph Ellis, submitted the following minority report, and moved its adoption:

MINORITY REPORT

Although I fully realize the importance of the provisions of Amendment 52 to the Constitution of the State of Arkansas, I beg permission of this House of Delegates to recommend that we not approve this resolution but that we implore the members of our profession to study the proposed constitutional amendment very carefully in the light of future possible effects on the education of our children. After each member had studied this proposal adequately, he should, without fail, exercise his privilege of voting in the general election in November.

After considerable discussion, and upon motion of Thomas and Townsend, the House voted to table the proposed resolution expressing opposition to Amendment 52 to the State Constitution.

17. Considered and approved the report of the Committee on the American Medical Education Foundation.
18. The Committee considered the Report of the Committee on Aging and noted the recommendation number one concerning the contract for the senior citizens and called attention to the fact that a policy is being considered by the other reference committee. We approve the recommendation as stated in the report that the Rehabilitation Advisory Committee bring within its scope of study all phases of rehabilitation within the State.

Dr. Ellis explained the committee's reason for recommending that the scope of the Rehabilitation Committee be enlarged and moved adoption of this section of the

report. Upon second by Monfort, the House so voted.

19. The Committee considered the resolution presented by the Ouachita County Medical Society concerning the formation of a Committee on Medical Indigency. We recommend that this resolution be approved.
20. Considered and approved the Report of the Arkansas Joint Council for the Improvement of Health Care of the Aged.

Upon motion of Ellis and Kcenig, The Report of Reference Committee Number One was accepted as a whole.

REPORT OF REFERENCE COMMITTEE NUMBER TWO

Louis K. Hundley, Chairman

Reference Committee Number Two met at 10:30 a.m. on Monday, April 18, in the Colonial Room of the Hotel Pines with committee members Louis Hundley, William Snodgrass, and Roy I. Millard present. The committee took the following action:

1. Approved Report of Public Health Committee and Sub-Committee on Rural Health and commended the chairman of the committee for the excellent job done.
2. Considered and approved the Report of the Sub-Committee on Maternal and Child Welfare and recommended that this committee be encouraged to continue their efforts in matters of maternal and child welfare, especially the study of statistics.
3. Approved the report of the Sub-Committee on Tuberculosis as published.
4. Approved the report of the Sub-Committee on Liaison with the State Board of Health as published.
5. Approved the Report of the Committee on Medical Education and recommended that the committee be commended for their efforts.
6. Approved the Report of the Committee on Hospitals as published.
7. Approved the Report of the Committee on Public Relations and recommended that they enlarge the scope of YOU AND YOUR DOCTOR for distribution throughout the State.
8. Approved report of the Budget Committee.
9. Approved Report of the Sub-Committee on Liaison with the State Welfare Department and recommended that the committee be commended.
10. Approved Report of the Second Councilor District Professional Relations Committee and recommended that the committee be commended.
11. Approved the Report of the Fourth Councilor District Professional Relations Committee.
12. Approved the Report of the Delegate to the American Medical Association and recommended that the delegates be commended for a good job.
13. Approved the Report of the Executive Secretary.
14. Approved the report of the Sub-Committee on Liaison with Blue Cross-Blue Shield.

PROCEEDINGS



Hostesses at the President's Plantation Banquet on Tuesday, April 19th. Left to right: Miss Nancy Hundley, Mrs. Don McCaughey, Mrs. Oliver Raney, all of Pine Bluff; Mrs. James B. Searcy of Altheimer, and Mrs. J. R. Pierce of Pine Bluff.



Head Table, Annual President's Banquet, Trio Club, Pine Bluff, April 19, 1960. Front Table, left to right: Mrs. Wright Hawkins, Dr. Hawkins, Fort Smith; Mrs. Joe Verser, Dr. Verser, Harrisburg; Mrs. Louis Hundley, Dr. Hundley, Pine Bluff; Mrs. John Chennault, Southern Medical Association Auxiliary President; Reverend T. P. Devlin, Pine Bluff; Mrs. J. J. Monfort, Dr. Monfort, Batesville. Back row: Mrs. Don McCaughey, Pine Bluff; Dr. John Wood, Mena; Mrs. Paul Schaefer, Fort Smith.

PROCEEDINGS

Chairman Hundley moved adoption of this portion of the Committee's Report. Upon motion by Koenig, the House so voted.

15. Considered the Report of the Constitutional Revisions Committee and made the following recommendations:

- A. Accepted the recommendation of the Committee that the proposed amendment to Article IV, Section 2 ("B" of Committee Report) not be adopted; suggests that the subject needs further study and recommends that a poll of the membership on this question be taken.

Upon motion of Hundley and Ellis, this section of the report was adopted.

- B. Disapproved the Committee's recommendation concerning the proposed amendment to Chapter 9, Section 5 ("A" paragraph of Committee Report) and recommends approval of the proposed amendment with the addition of the word "or" preceding the sub-paragraph.

Chairman Hundley requested vote of the House on this Section of the Report. Verser moved that the Reference committee's recommendation not be adopted, thus rejecting the amendment to the Constitution. Upon second by Ellis, the House so voted.

16. The Committee considered the report of the Council and heard discussion concerning the proposed contract for senior citizens. The Committee adjourned at 12:00 noon and reconvened at 4:30 p.m. on April 18th in the Colonial Room of the Hotel Pines. After further discussion, the Reference Committee voted (chairman abstaining) to approve the principle of the proposal for aged insurance with the exception that the

service principle be excluded from the contract and to recommend that the House of Delegates approve this contract with the elimination of the service principle.

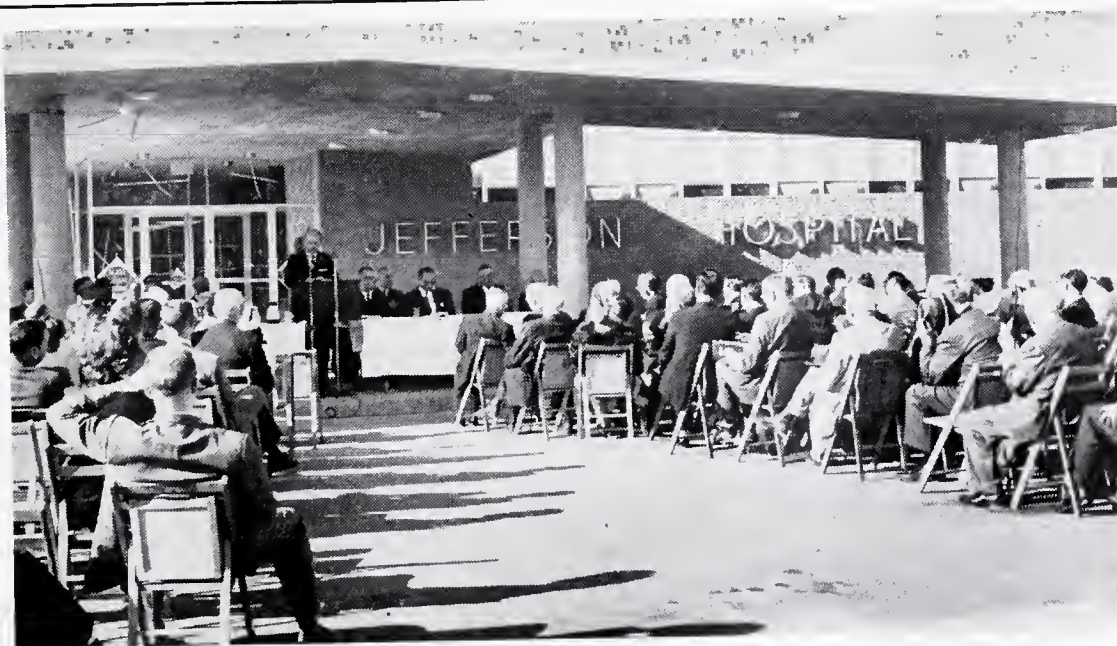
At this time the Chairman of the Reference Committee Number Two, Louis K. Hundley, presented the following minority report:

MINORITY REPORT

As chairman of the Council Committee on Blue Cross-Blue Shield plans, I feel that I must take exception to the majority report of the Reference Committee on the Old Age Policy proposed by our committee and implemented by Blue Cross-Blue Shield.

After months of study and with the assistance of statisticians and actuarial experts, we propose a limited service policy which pays the doctor his normal fee and yet guarantees the patient that this will be the total bill. Many safeguards are included in the proposed policy, which are obvious to anyone who takes time to read it.

May I point out that this policy was developed by the direction of this House of Delegates to show the people of Arkansas that we can offer them a better deal than they can get through a tax-supported program such as that proposed by the Forand Bill. We have been assured by Congressman Mills that this is exactly the type of ammunition that he needs to combat such legislation. He has read



Dr. E. L. Hutchison of Pine Bluff was master of ceremonies at the Dedication of the New Jefferson Hospital, Pine Bluff, April 19, 1960.

this proposal and highly approves of it. It is interesting to note that our Radiological Section has voted to approve this service principle.

It is our proposal that this policy be tried for a year and then if it does not work out as we believe it will to your full satisfaction, the service principle will be cancelled and it will revert to a straight indemnity policy — All we ask is that you give it a trial.

Hundley moved adoption of the Minority report. Second by Koenig. After considerable discussion, the House voted to reject the Minority Report.

Hundley then restated the recommendation of the Committee's Majority Report. Upon motion of Levy and Thomas, the House adopted Section 16 of the Report of the Reference Committee.

Hundley thanked the members who had attended the meeting of the Reference Committee, and urged that the members of the House of Delegates and other members of the Society participate fully and freely in the newly inaugurated program of reference committee hearings for discussion of controversial subjects.

Chairman Joe Verser read the following Supplemental Report of the Council:

REPORT OF THE COUNCIL

Joe Verser, Chairman

The Council met on Sunday, April 17th, and transacted the following business:

1. Read and took note of a resolution by the Anesthesiology Society of Arkansas expressing dissatisfaction with the new method for paying anesthesiologists under the Medicare program;
2. Heard Dr. Monfort report on the breakfast given by the Arkansas Medical Society in Washington, D. C., for the Arkansas Congressional delegation;
3. Voted to send a resolution to Congressman Wilbur Mills expressing appreciation for his opposition to Forand and Social Security legislation;
4. Elected Dr. John Laurens of Little Rock a medical society representative on the Board of Trustees of Blue Cross-Blue Shield;
5. Approved the Rural Health Committee's plan for Society participation in a community improvement program;
6. Accepted and approved the annual audit report;
7. Voted to pay the expenses for two representatives to the Conference on Aging to be held in Chicago;
8. Approved the nomination of Dr. Paul Hughes and Dr. John Olson for membership on

the Arkansas State Arbitration Commission.

9. Upon the recommendation of the Public Relations Committee, voted not to participate in the A. H. Robins proposal to select a doctor most active in civic affairs;

10. Approved life and affiliate membership for the list of physicians presented by the county Medical Societies, as follows:

AFFILIATE MEMBERSHIP

DISABILITY

Member	County Society
Allan A. Gilbert	Washington
J. H. Downs	Faulkner
C. A. Churchill	Independence
Virgil L. Payne	Jefferson
Frank Norwood	Polk
H. L. Brown	Pulaski
T. E. Burgess	Pulaski
S. T. W. Cull	Pulaski
Bryce Cummins	Pulaski
James D. Hayes	Pulaski
Ralph A. Law	Pulaski
I. H. Jewell	Logan

MILITARY SERVICE

Member	County Society
James R. Dickson	Conway
Oscar Gray, Jr.	Pulaski
Morriss Henry	Sebastian

RESIDENCY TRAINING

Member	County Society
Chester W. Peeples, Jr.	Crittenden
David S. LeVine	Craighead-Poinsett
Frank B. McCutcheon	Washington
Gerald K. Patton	Crawford
Raymond E. Peeples	Hot Spring
Carl E. Hyman	Jefferson
Orval E. Riggs	Lawrence
W. W. Workman	Mississippi
L. K. Williams	Polk
J. W. Hollis	Pulaski
William D. Sessoms	Pulaski
J. Harry Hayes	Pulaski

RETIREMENT

Member	County Society
Joseph DeLaney	Washington
W. A. Fowler	Washington
Frank A. Gordon	Washington
Jesse T. Wood	Ashley
A. V. Adams	Boone
H. K. Carrington	Columbia
G. F. McLeod	Columbia
Paul Jeffery	Independence
W. H. Bruce	Jefferson
John P. Ferguson	Jefferson
Wm. T. Lowe	Jefferson
J. D. Riley	Logan
B. C. Middleton	Miller
Edward Kultgen	Phillips
Shelby Atkinson	Pulaski
H. A. Higgins	Pulaski
W. M. McRae	Pulaski
Jesse Stevenson	Sebastian
H. C. Dorsey	Sebastian
H. A. Murphy	Union

LIFE MEMBERSHIP

Member	County Society
L. T. Evans	Independence
Van D. McAdams	Independence
James L. Weathers	Independence
Walter A. Nowlin	Pulaski

11. Approved a program of investment in short-term government securities to make possible earning interest on temporary bank balances while keeping the money available;

The Council met on Monday, April 18th and took action as follows:

1. Approved for referral to the resolutions committee a resolution presented by the Arkansas Veterinary Medical Association requesting Medical Society support in obtaining legislation to regulate and define the practice of veterinary medicine;

2. Approved in principle a plan contained in the Arden House Report for the control of Tuberculosis.

The Council met on Tuesday, April 19th, and transacted the following business:

1. Referred to the Resolutions Committee the following resolutions presented by Dr. Granville Jones, Superintendent of the State Hospital;

(A) To work for the establishment of a Department of Mental Health in the State of Arkansas;

(B) To request the State Government to appoint the superintendent of the State Hospital as the Mental Health authority for the state.

2. Received and approved for referral to the Resolutions Committee a resolution on financing the operation of the Medical Center through a cigarette tax;

3. Directed that the Chairman of the Council appoint a committee to be made up of several committee chairmen to study the problems of prematurity as requested by Dr. Herron.

Upon the motion of Verser and Monfort, the House voted adoption of the report as read with the exception of the approval of resolutions.

Resolutions referred to the House by the Council were:

1. Resolutions of Thanks. Approved

2. Resolution expressing appreciation to Wilbur Mills. Approved

3. Resolution supporting Veterinary Medical Association in its proposed legislation. Approved

4. Resolution concerning funds for operation of the Medical Center. Approved

5. Resolution for the establishment of a Department of Mental Health in the State of Arkansas, and

6. Resolution requesting the State Government to appoint the superintendent of the State Hospital as the Mental Health Authority for the State.

Verser explained that the Council had voted to defer action on resolution "5"

and "6" until the boards concerned could study the propositions and make recommendations to their respective organizations. Upon motion of Levy and Monfort, the House voted approval of the Council action regarding both resolutions.

Upon motion of Oates and Norton, the House voted to go on record as approving in principle the plan for compulsory polio inoculation of public school children.

L. E. Drewery reported for the Fourth Congressional District, stating that their nominee for the position on the State Board of Health is Dr. Garland Murphy of El Dorado. Upon motion of Drewery and Snodgrass, the nomination was approved by the House.

Upon motion of Townsend and Shuffield, the House voted that the Executive Session be ended and that guests be invited to enter the room.

Speaker Hyatt called for discussion from the floor regarding the place for holding the 1962 Annual Session. Lon Reed extended an invitation for the Society to hold its 1962 Annual Session in Hot Springs. Upon motion of Drewery and Verser, the House unanimously accepted the invitation.

The House adjourned at 12:45 p.m.

REGISTRATION

Physicians	385
Medical Students	35
Scientific Exhibitors	9
Commercial Exhibitors	80
Other guests	7
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	516

REPORT OF THE COMMITTEE ON AGING

L. E. Drewery, Chairman

These events have occurred since submission of the Report of the Chairman of the Committee on Aging on Feb. 10, 1960 which was published in the March Issue of the Journal:

1. The Chairman and other members of the Arkansas Medical Society together with the Executive Secretary attended a Regional Conference on Aging in New Orleans sponsored by the AMA.

2. The Architectural Forum sponsored by the Governor's Commission on Aging and by the Arkansas Chapter of the American Institute of

Architects was held at the Lafayette Hotel on March 24, 1960 with architects, county judges, church groups, members of the Governor's Commission on Aging, Nursing Home operators, and physicians attending. The attendance was about 75. Needs for Housing, Geriatric care, Nursing Home facilities were discussed together with methods of sponsoring, planning and financing were effectively presented. Concepts as developed around the world to meet these needs were discussed.

3. The Joint Council to Improve the Medical Care of the Aged met on March 24th, presided over by the Chairman of Aging Committee and two resolutions of importance were passed: a. **That a Nursing Home Licensure Law** be developed clearly defining who within the State Government would administer the Licensure Law, together with establishing standards of Nursing Homes, and qualifications for Nursing Home Operators; and b. a resolution was adopted to enlarge the scope of the Joint Council by forming a larger group known as a Gerontological Society of Arkansas to bring in Business Executives, Banking Officials, Insurance Executives and others to further define the unmet needs of the Aging and to provide mechanisms whereby these unmet needs may be supplied.

A certain momentum has been initiated toward overcoming a group of deficits we now find in the scope of Medicine. It has been a pleasure to serve as your Chairman on the Committee of Aging for the past 2 years and I appreciate very much being permitted to serve as a member of this Committee for the coming year. As I understand it the Chairmanship of the Committee on Aging will be delegated to our able outgoing President, Dr. James Kolb. Much remains to be done and I am sure that the dedicated members of the Arkansas Medical Society will do their part in meeting the great challenge ahead.

REPORT OF THE CHAIRMAN OF THE JOINT COUNCIL TO IMPROVE HEALTH CARE OF THE AGED

L. E. DREWERY, Chairman

As Chairman of the Joint Council to Improve the Health Care of the Aged and as Chairman of the Sub-Committee on Health of the Governor's Commission on Aging, I feel a great responsibility in addressing you today. At the end of each month of study, after each conference on aging that I attend, and after conversations with specialists in the field of Aging, the many problems appear less difficult of solution. During the past two

centuries America became great because of individual effort; the rugged individualists were the architects of our greatness. For the past 25 years this individualistic approach no longer is effective — the future progress of our nation belongs to the inter-personal group, or interdisciplinary endeavor. Very few physicians are aware of this change. For over a century a majority of our physicians practiced alone or solo. Even World War II changed this solitary type practice of medicine but little.

As early as 1913 in New York the International Ladies' Garment Workers union operated health centers. Later 10 hospitals were developed by the United Mine Workers and were union operated. In 1947 the Health Insurance Plan of Greater New York was organized. This is largely union dominated but it is community oriented and non-union people can buy insurance contracts. This plan contracts for medical services through a Group Practice. The New York Times reported in last Sunday's edition that this plan had just purchased a large hospital on Long Island to give better facilities for the Group Practice physicians. This type Group Practice (many physicians refer to this type practice as Closed Panels) is not limited to unions; the well known Kaiser-Permanente Plan was set up and operated by management. They employ physicians and para-medical employees on a salary basis rather than the more prevalent "fee for service rendered" system.

Most physicians in our Nation are very concerned about this group endeavor. As previously stated very few physicians are fully aware of the necessity of group action rather than individual action in meeting our ever increasing complicated problems — or, at least, he feels that he should be the exception. So far this discussion seems far afield from the health problems of our aging population but there is much in common with what happened in the ILGW Union operated health centers, the Health Insurance Plan for Greater New York, the 10 UMW Union owned and operated Hospitals, and the Kaiser-Permanente Plan and what is needed to happen in our Health Prob-

lems of Senior Citizens. The plans came into being as a method of getting health care for the union members at a wholesale or more economic cost. I am not in a position today to discuss specifics although rather general plans are being formulated. If economics dictate that union workers should get medical care wholesale or in a more economic group manner, then it is of greater paramount importance that our aging population with medical needs 250% greater than that of the union worker and with income less than 50% that of the worker receive a more economic system of medicine. Regardless of changes in the Social Security Law, Grants-In-Aid, or any other method politically devised immediately or in the near future a more efficient medical care plan must be devised which can, in addition, increase the quality of medical care.

Specifically, one cannot plan the medical facilities of a Nursing Home, a Retirement Village, a Retirement Center without first taking inventory of private medical or other community facilities available. A basic Consultation Room, appointed in much the same manner as any Executive Office, together with an examining room furnished with special examination table, cabinets and a minimal number of special items any General Practitioner could readily give you.

The space and equipment must never exceed the needs or capabilities of the physicians in the community that will furnish medical care. Specialized care can be obtained less expensively by taking a patient to a specialist in an adjoining town or city than to have expensive equipment and have the specialist come to the nursing or geriatric facility. 90% of the general needs of a patient can be met by a well trained general practitioner who can examine the patient at the bedside or in the examining room. Another 5% can usually be met at the General Practitioner's Clinic such as ECG's, X-rays, Proctoscopic examinations, etc. The remaining 5% would require transporting the patient elsewhere.

Studies are under way and when the county surveys are completed and tabu-

lated we believe that regional Geriatric Hospitals will be needed. Many counties have already expanded their county hospitals and have used their full millage allowed by Arkansas Statute has been utilized. Ouachita County Hospital at Camden, Arkansas, built a new 100 bed hospital in 1953. A 50 bed expansion will be completed this year. By the time the new beds are available, there will be a waiting list. At 10 o'clock last night the census was 110 patients and 9 babies. 22 of those patients or 20% were over 65 years of age and several had been hospitalized from 3 to 4 weeks. Each Regional Geriatric Hospital should have full rehabilitative facilities and a nursing home should be adjacent to the hospital and under the same administrative control. When patients no longer need hospital care they can be transferred to the adjacent nursing home and rehabilitative care can be continued if indicated. When the patient can be sent home one of the nurses caring for him in the nursing home could be assigned to visitation nursing care with but little additional orientation being required. An out-patient clinic could be held at reduced rates and drugs could be supplied from the pharmacy at slightly higher than wholesale costs. Our surveys, I am sure, will reveal many of our aging population in need of glasses, dentures, hearing aids and other prosthetic devices. Technicians can be employed, skilled in their specialties, and the patients and outpatients can obtain these much needed articles at great savings to themselves and to others. Five or six Regional Geriatric Hospitals with adjacent Nursing Homes with adequately trained nurses and aids could give great help and comfort to our older patients. Standards of adjacent nursing homes would be elevated. Research could easily become a reality. Diagnostic facilities would be readily available on an out-patient basis, reducing hospitalization. Rehabilitative facilities would be within driving distance of anyone in the state. Education and preventive medicine would become a natural part of the program. We seek your help; and promise to do all that we can to make this program a reality. Thank you very much.

REPORT OF THE COMMITTEE ON THE AMERICAN MEDICAL EDUCATION FOUNDATION

Joseph Norton, Chairman

The American Medical Education Foundation (AMEF) has been set up to collect and solicit funds from industry, individual lay citizens, and from the physicians of this country, distributing those funds annually by one of two ways: where designated to a particular medical school, the money goes directly to that designated school; where undesignated, the money goes into an account which is annually divided equally among all of the medical schools. All of the expenses of AMEF are paid through the generosity of the AMA, so that every dollar contributed goes directly to the medical schools.

The Foundation closed the 1959 books on January 31, 1960, with a total of \$1,195,824.79, an increase of \$75,780.10 over the 1958 total. Also that 1958 total included a gift of \$100,000 from the AMA. The total increase in contributed money, therefore, is \$175,780.10, or an increase of 17.2% over the amount contributed the previous year, not including the AMA grant the previous year. The two-year increase in the actual amount of contributions, discounting the AMA grants, is an extraordinary 36.7%.

These figures will be gratifying to everyone who has put forth time and effort to make the medical professions support of medical education a significant amount, and particularly to all who support the idea of private enterprise aid to our medical schools in lieu of too much governmental support of our schools.

In our own state during the past year, this committee has functioned only fairly well. The chairman attended the national conference for AMEF chairmen in Chicago in January 1959, substituting for Dr. T. D. Brown, chairman at that time. Later, it was suggested to Dr. Kolb that we might ask for a voluntary contribution to the AMEF annually when statement for dues to AMS was presented to our society members, but this was deferred, apparently because of plans for solicitation of funds for the new Medical Education Foundation of Arkansas. One

member of the committee, Dr. McCurry of Cash, Arkansas, has done a remarkable job of soliciting members of his Councilor District, through personal contact, mail, and appearance at meetings in that District. His enthusiasm and energy have been an inspiration to many of us. The Auxiliary of the AMS has done a wonderful job of publicizing AMEF this past year, through speeches, county committees, sale of Christmas cards, and other means. We are all indebted to their efforts. Mr. Schaefer has regularly sent promotional leaflets through the mail from the Society office, and Dr. Kahn has repeatedly printed news of the AMEF and the names of Arkansas physician contributors to the AMEF in our state Journal, and their efforts have been fruitful, and are appreciated. The funeral directors of Arkansas and the Arkansas Pharmaceutical Association were contacted by phone and by mail, urging support of a plan, originated in Arizona, whereby those funeral directors and pharmacists who usually send some Christmas gift to doctors might, in lieu of the usual gift, send a donation to the AMEF, with AMEF notifying the doctor of the gift made on his behalf. The plan was brought before these two groups in the fall of 1959. The pharmacists even carried a page article in their official journal, November 1959, reprinting the letter, and making comment favorable to the plan. We are indebted to these organizations for this effort, and hope that the idea might catch on with their members.

Now, I would like to present some figures which will show you what AMEF has meant to us in Arkansas. These figures were obtained directly from the AMEF office in Chicago, and represent funds that were collected and disbursed to Arkansas in 1959.

1—The AMEF disbursed to the University of Arkansas School of Medicine the following amounts:

1958 -----	\$7,766.00
1959 -----	\$8,473.40

2—The doctors of Arkansas sent the following amounts of money to AMEF in 1959:

Designated to U. of Arkansas -----	\$ 839.50
---------------------------------------	-----------

Designated to other
schools \$ 670.00

Total \$1,509.50

3—The Auxiliary of AMS sent to AMEF in 1959 a total of \$2,071.40.

4.—The total contribution to AMEF in 1959 was:

Through individual
MD's \$1,509.50

Through Auxiliary
efforts \$2,071.40

Total \$3,580.90

5—Of the total of \$3,580.90 sent to AMEF from Arkansas in 1959, the sum of \$670.00 was designated for other schools, and the sum of \$2,910.90 was designated for the University of Arkansas.

6—The figures show then:

In 1959, AMEF sent to
U of Arkansas \$8,473.40

Arkansas MD's and Auxil-
iary sent to AMEF, des-
ignated for U. of Ar-
kansas, a total of \$2,910.90

Therefore, through AMEF
efforts, from out-of-state
sources, our University of
Arkansas School of Medi-
cine received, in 1959, a
total of \$5,562.50

In other words, through the efforts of AMEF, our University of Arkansas School of Medicine has received, in 1959, almost twice as much money from non-designated out-of-state contributions as from designated contributions from the MD's and Auxiliary of Arkansas.

The value of the AMEF should be evident. It's growing success should be appreciated and applauded. We, in Arkansas, have especially cause to be grateful for the support given to our University through its efforts. I hope that we might continue to support AMEF in Arkansas, contributing to the University of Arkansas School of Medicine through AMEF, increased time and money. This is certainly in keeping with our philosophy of free enterprise support of medical education. I further hope that there will be no confusion or competition between the new MEFA and the AMEF, for each is designed to do a needed job in a dif-

ferent field of support for the medical school, and each is worthy and deserving of support.

This Committee has only two recommendations — one, that all who have contributed to AMEF in time and money in 1959 please know that we do appreciate their efforts, and hope they will continue their support; and second, that all efforts for support of AMEF in Arkansas, as listed in this report, be continued, and new means of support be tried in Arkansas in 1960-61.

REPORT OF THE LIAISON COMMITTEE WITH THE ARKANSAS STATE DEPARTMENT OF PUBLIC WELFARE

C. Randolph Ellis, Chairman

On February 14, 1960 your committee met with your executive committee and Mr. Carl Adams, Director of the Welfare Department. The discussion concerned the policy of the Welfare Department assisting in the expense of the outpatient care at the University of Arkansas Medical Center in Little Rock, Arkansas.

No official action was taken at this meeting.

On March 10, 1960, your committee met with Mr. Carl Adams and Mr. Shirley Hasty of the Welfare Department and with Dr. Douglas Lawrason and Mr. Storm Whaley of the University of Arkansas Medical Center. This group approved the basic principles of an agreement presented by Mr. Adams for financial assistance in outpatient departments of the state. He had previously stated that other members of the Arkansas Hospital Association had agreed not to establish outpatient departments, leaving a larger fund available for use at the University of Arkansas Medical Center. The details of the agreement were left for officials of the University of Arkansas Medical Center and officials of the Welfare Department to work out together.

This committee also discussed limitation of hospital days for welfare patients to those necessary for medical treatment and care, moving "nursing care" patients to their home or some other suitable institution. The Welfare Department will assist in moving those patients who have

received maximum benefit for hospital care.

I appreciate those who attended these meetings and hope that the problem has already been worked out satisfactorily to all concerned.

SUPPLEMENTAL REPORT OF THE ADVISORY COMMITTEE TO THE WOMAN'S AUXILIARY TO THE A.M.S.

The following is the report of the president of the Woman's Auxiliary:

**Mrs. Paul Gray, President
Woman's Auxiliary to the Arkansas
Medical Society**

In Arkansas this year we have carried out the National Auxiliary theme, "Individual Responsibility for Better Community Health".

Our projects have been:

- A—American Medical Education Foundation
- R—Recruitment for Health Careers
- C—Community Service
- S—Safety

Thus far, I have held three board meetings, the Post-convention meeting in Fort Smith, the fall meeting in Little Rock, and the mid-winter meeting in Little Rock.

At the Post-convention board meeting, the new workbooks were given to all officers, chairmen and county presidents. We were most fortunate in having Mrs. Frank Gastineau, then President-elect of the national auxiliary, at our board meeting.

The fall board meeting was held on September first and followed the Fall Conference.

The Fall Conference convened at 10:00 A.M., September 1, 1960, at the Woman's City Club. The American Cancer Society, Arkansas Division, presented the new film "Time and Two Women". Dr. Joe Hardin was present to answer any questions.

Mr. Charles Johnson, from the Division of Field Service, American Medical Association, presented to the group, "A New Challenge for the Auxiliary". He challenged the auxiliary to take the lead in medical legislative matters, and to get to know the Congressmen.

Following this, the four priority projects were presented. Mrs. Austin Doren, A.M.E.F. Chairman, presented her goals for the year. Mrs. Louis K. Hundley, Recruitment for Health Careers Chairman, served as moderator for a panel on Recruitment. Her panelists were Mr. Mike Kumpuris, Chairman of the Department of Physical Therapy, St. Vincent's Infirmary; Mrs. John Sorenson, Director of Occupational Therapy, Arkansas Children's Hospital; and Mrs. Betty Rice Shook, instructor, University of Arkansas Medical Center.

Mrs. William H. Breit, Community Service Chairman, introduced her panel, entitled "Your Auxiliary and Community Service". The following auxiliary members participated on this

panel: Mrs. Grimsley Graham, Chairman of the Erle Chambers Memorial Library Fund; Mrs. Robert H. Atkinson, Civil Defense Chairman; and Mrs. Hoyt Choate, Rural Health Chairman.

The conference was concluded with a panel on Safety, moderated by chairman, Mrs. Frank Adams. Her panelists were Mrs. Henry Hudson, Supervisor of Health, Physical Education and Safety, Little Rock Public Schools; and Mr. Orville Kraus, Child Safety Consultant, Division of Maternal and Child Health, Arkansas State Board of Health.

Following the conference, luncheon was served. Greetings were brought to the group from Dr. James M. Kolb, President, Arkansas Medical Society; and Mr. Paul C. Schaefer, Executive Secretary, Arkansas Medical Society.

The mid-winter board meeting was held on January 12 at Coachman's Inn, Little Rock. Reports were heard from attending officers, state Chairman, and county presidents. Twenty-two were present.

Throughout the year I have visited the following counties: Arkansas, Benton, Boone, Bowie-Miller, Clark, Craighead-Poinsett; Franklin, Garland, Greene-Clay, Hempstead, Hot Spring, Howard-Pike, Independence, Jefferson, Johnson, Ouachita, Phillips, Pope-Yell, Pulaski, Sebastian, Sevier-Polk, Southeast, Union, Washington, and White.

In three instances the counties combined in a meeting.

I also attended the Ladies Activities at the G.P. conference in Little Rock in October.

I attended the meeting of the Woman's Auxiliary to the American Medical Association in Atlantic City last June, and also attended the Conference for Presidents and Presidents-elect of the Woman's Auxiliary to the American Medical Association, held in Chicago in October.

It has been a real privilege to serve as president of the state auxiliary this year. It will be a year long remembered. I value highly this opportunity to serve, and appreciate all the many friends I have made throughout the state.

REPORT OF THE SUB-COMMITTEE ON LIAISON WITH BLUE CROSS-BLUE SHIELD

Charles W. Reid, Chairman

The Committee assisted Arkansas Blue Cross-Blue Shield in studying health and accident insurance for citizens over sixty-five. This was done in accordance with the policy of the House of Delegates adopted at the 1959 Fort Smith meeting. As stated in the minutes of that meeting, the specific proposal by the American Medical Association was unanimously approved as follows:

"That the American Medical Association, the constituent and component medical societies, as well as physicians everywhere, expedite the development of an effective voluntary health insurance or prepayment program for the group

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over 65 with modest resources or low family income; that physicians agree to accept a level of compensation for medical services rendered to this group which will permit the development of such insurance and pre-payment plans at a reduced rate."

Dr. Gerald Teasley, the former chairman of this committee, held the first of a series of meetings which were called after I became chairman and until the project was turned over to a combined committee. The report of the Council will reflect the results of this work.

At the request of the president of the Society, I attended a regional conference of the AMA Committee on Insurance and Prepayment plans held in Memphis, Tennessee, on April 25th and 26th, 1959. The meeting was worthwhile and was attended by representatives of Alabama, Louisiana, Florida, Georgia, Mississippi, Oklahoma, Tennessee, and Texas. At that meeting, I reported that the Arkansas Medical Society House of Delegates had voted approval of the principle of the plan outlined above. A joint committee composed of the members of the Liaison Committee with Blue Cross-Blue Shield and the Insurance Committee of the Medical Society reviewed the Blue Cross-Blue Shield plan for senior citizens and the combined committee is still working to bring about the Insurance coverage for the senior group.

In compliance with the Arkansas Medical Society Council action on June 28, 1959, our committee offered our services to Blue Cross-Blue Shield to study the problem of over-utilization of that insurance in Arkansas. The Blue Cross-Blue Shield Board of Trustees appointed a committee of the Board to serve with the members of the Society committee on the study. One of the physician-members of the Board of Trustees objected to the Society's action in appointing the Liaison Committee to make the study on the grounds that it involved too many people. The President of the Blue Cross-Blue Shield then directed Dr. Dickinson and Dr. Guy Farris to proceed with the study independent of the Medical Society committee.

It is recommended that the Council follow closely the operation and developments of Blue Cross-Blue Shield in Arkansas and that the physician-members of the Board of Trustees be requested to assist in keeping the Medical Society informed.

The following is a letter from the Medical and Chirurgical Faculty of the State of Maryland on veterans care, which was endorsed by the House of Delegates at its meeting on April 17th:

"The House of Delegates of the Medical and Chirurgical Faculty has endorsed the recommendations of its Committee on Veterans Medical Care and resolutions which were passed at the annual meeting of the House in 1957 and again in 1958. This year, 1959, the House again expressed its endorsement of the following recommendations:

1. Limit Federal Medical care of all veterans to service-connected disabilities.

2. Have veterans with service-connected disabilities cared for by the Armed Forces Hospitals or by local civilian hospitals on a Hometown Care basis. U. S. Public Health Service hospitals might also be used to a limited extent.
3. If and when Number 1 and Number 2 are accomplished, a study be made from the State level as to the disposition of the Veterans Administration hospital facilities. Consideration should be given to turning them over to the States, possibly as hospitals for tuberculosis and neuro-psychiatric patients.

These recommendations were forwarded to all State Medical Societies in 1958, as well as to the American Medical Association.

At the 1959 meeting of the Medical and Chirurgical Faculty's House of Delegates, the House voted to send copies of these recommendations to all State Medical Societies again and to the American Medical Association, stating, "that we are very anxious to get concerted action by all State Medical Societies so that we will have some chance of getting a Congressional Hearing before the House Veterans Affairs Committee."

In explanation of the above, it is pointed out that 85% or more of the cases cared for in Veterans Administration Hospitals are non-service-connected cases. Several national administrations have stated there is no more reason for a veteran getting free medical service than any other citizen, unless his disability is service connected. This medical care costs the taxpayers almost a billion dollars a year. This information is contained in the Committee report to the House of Delegates of the Medical and Chirurgical Faculty.

It is felt by the House of Delegates that if a concerted effort is made by all State Medical Societies and the American Medical Association a Congressional Hearing could be forced and thereby bring to the attention of the American taxpayer the present state of affairs. There is little hope of getting any action in this matter without the publicity attendant upon such a Congressional Hearing; such publicity would bring to the attention of the taxpayer the amount of money being spent for taking care of veterans with non-service-connected disabilities and would, it is felt, force some action on the part of Congress.

Competent advice from our representatives in the Congress suggests that such a hearing could be obtained if the A.M.A., supported by all of the State Medical Societies, would ask for it. They also feel it would be futile for any one State Society to endeavor to obtain such a hearing.

There is every reason to believe that Congress is rather economy-minded at the present time, more so than for years. They are concerned about inflation. Now is the time to act.

It is the earnest hope of the Medical and Chirurgical Faculty of Maryland that your Society will take action similar to that taken by the Faculty's House of Delegates and will also urge the American Medical Association to join in trying to obtain the Congressional Hearing

control the tension—treat the trauma



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meprobamate with PATHILON[®] tridihexethyl chloride Lederle

*greater flexibility in the control of tension, hypermotility
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PATHIBAMATE combines two highly effective and well-tolerated therapeutic agents:

meprobamate (400 mg. or 200 mg.) widely accepted tranquilizer and . . .
PATHILON (25 mg.)—anticholinergic noted for its peripheral, atropine-like action, with few side effects.

The clinical advantages of **PATHIBAMATE** have been confirmed by nearly two years' experience in the treatment of duodenal ulcer; gastric ulcer; Intestinal colic; spastic and irritable colon; ileitis; esophageal spasm; anxiety neurosis with gastrointestinal symptoms and gastric hypermotility.

Two dosage strengths—**PATHIBAMATE-400** and **PATHIBAMATE-200** facilitate individualization of treatment in respect to both the degree of tension and associated G.I. sequelae, as well as the response of different patients to the component drugs.

Supplied: **PATHIBAMATE-400**—Each tablet (yellow, 1/2-scored) contains meprobamate, 400 mg.; **PATHILON** tridihexethyl chloride, 25 mg.

PATHIBAMATE-200—Each tablet (yellow, coated) contains meprobamate, 200 mg.; **PATHILON** tridihexethyl chloride, 25 mg.

Administration and Dosage: **PATHIBAMATE-400**—1 tablet three times a day at mealtime and 2 tablets at bedtime.

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Adjust to patient response.

Contraindications: glaucoma; pyloric obstruction, and obstruction of the urinary bladder neck.



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which is considered desirable and is the only means of correcting present abuses of Veterans Medical Care.

Sincerely yours,
William Carl Ebeling, M.D.,
Secretary."

PROPOSED AMENDMENT TO THE BY-LAWS OF THE ARKANSAS MEDICAL SOCIETY

1. Amend Chapter VIII, Section 1A of the By-Laws of the Arkansas Medical Society so as to add thereto the following:

"11. Committee on Budget and Finance."

2. Amend Chapter VIII of the By-Laws of the Arkansas Medical Society so as to add thereto the following:

"Section 12. The Committee on Budget and Finance shall consist of nine members. Immediately upon the adoption of this amendment the President of the Society shall appoint three members for a term of three years, three members for a term of two years, and three members for a term of one year. Thereafter all appointments shall be for a term of three years. No member of the Committee shall be eligible to succeed himself. The Treasurer of the Society shall be an ex officio member of this Committee.

"The Committee on Budget and Finance shall supervise the bookkeeping and accounting of the funds of the Society. It shall prepare the annual budget of the Society taking into due consideration (a) the budget for the past years; (b) the anticipated revenues of the Society; and (c) the anticipated financial needs of the Society. As soon as the budget is approved by the Committee it shall cause same to be published in the Journal of the Society along with the existing budget and the audit, at least one month prior to the annual meeting. The budget shall be submitted to the House of Delegates for its adoption or revision. Any money expended in excess of the budget shall be clearly shown in the annual audit as money expended outside of the regular budget."

RESOLUTIONS

1. Re: Fund for operation of the Medical Center

WHEREAS, the operation of the Medical Center currently has a deficit in excess of some five hundred thousand dollars and its continued operation is essential not only for the health and

welfare of the State, but to maintain and improve the statute of the State of Arkansas among the other states of the Union,

WHEREAS, available funds are apparently not sufficient to carry on the Medical Center's program,

BE IT RESOLVED, that additional monies be obtained by an additional tax to be levied on cigarettes, such funds specifically pledged to the Medical Center.

2. Re: Legislation proposed by the Arkansas Veterinary Medical Association

WHEREAS, The Arkansas Veterinary Medical Association endeavors to secure a legislative Act to Define and Regulate the Practice of Veterinary Medicine, Create a State Board of Veterinary Medical Examiners, to Prescribe its Duties, to Prescribe the Qualifications of the Membership Thereof, Their Compensation, Term of Office and Providing for the Giving of Bond by the Treasurer Thereof for the Faithful Performance of His Duty, Prescribing the Authority of This Bond, the Collection of Fees, Disbursing of Said Funds, and Providing Penalties for the Violation of This Act, and Providing When This Act Shall Become Law.

NOW, THEREFORE, BE IT RESOLVED that the Arkansas Medical Society go on record as approving the enactment of appropriate legislation for an Act to Define and Regulate the Practice of Veterinary Medicine in Arkansas.

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the President of the Arkansas Veterinary Medical Association and a like copy be placed in the permanent records of the Arkansas Medical Society.

3. Re: Expression of Appreciation to Congressmen Wilbur Mills

WHEREAS, the Honorable Wilbur Mills, representative from the second District of the Sovereign State of Arkansas in the United States House of Representatives, has served the State of Arkansas with dignity in such manner as to increase her stature in these United States;

WHEREAS, the dignity of each individual in these United States is threatened by those who would destroy his incentive to work and provide for his family's needs;

WHEREAS, there are those who would preempt such rights and bestow them on an all-powerful central government;

WHEREAS, the Arkansas Medical Society heartily affirms the stand taken by the Honorable Wilbur Mills in combating this threat to our way of life,

WHEREAS, we of the Arkansas Medical Society wish to express our faith in his future efforts in this crisis;

BE IT THEREFORE RESOLVED, that we of the Arkansas Medical Society do hereby express our heartfelt gratitude to the Honorable Wilbur Mills for his leadership.

4. Re: Medical and Hospital Care for the Aged

WHEREAS, there is considerable controversy in America today regarding medical and hospital care for the aged, and

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WHEREAS, the medical profession realizes that the Forand Bill is not the proper answer to these problems; and

WHEREAS, the Forand Bill would not answer the need for the indigent old people who really need help in this area; and

WHEREAS, the medical profession is constantly accused of being opposed to all governmental programs,

THEREFORE, BE IT RESOLVED, that the Arkansas Medical Society in regular Annual Session April 20th endorses a governmental grant-in-aid program for indigent old people to provide hospital and medical care.

5. Re: Committee on Medical Indigency

WHEREAS, the number of members in our Society that are indigent is apparently increasing,

WHEREAS, more tax monies are being diverted from the Federal and State Treasuries into grants-in-aid for various welfare services,

WHEREAS, to be consistent with our policy to oppose the Forand Bill, we should at least, be cognizant of the large sums of monies being spent on the indigent, especially for hospital care and for out-patient care in Pulaski, Perry and Cleveland Counties,

WHEREAS, approximately 32 states now have such committees on indigency in their Medical Society Committee framework,

WHEREAS, the medical society at present has no policy making committee in liaison with the State Welfare Department,

BE IT THEREFORE RESOLVED that a committee on Medical Indigency be formed by the Arkansas Medical Society, that it be instructed to study the problem of medical indigency in Liaison with the State Welfare Department and report to the House of Delegates or the Council of the Arkansas Medical Society within six months.

6. Re: Appreciation

A. Officials of the City of Pine Bluff

WHEREAS, the 84th Annual Session of the Arkansas Medical Society just completed in Pine Bluff has been an outstanding success,

WHEREAS, the officials of the city of Pine Bluff including the police department, as well as the local bus company, have added much to the success of this meeting,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the Mayor.

B. Pine Bluff Drug Association

WHEREAS, the 84th Annual Session of the Arkansas Medical Society just completed in Pine Bluff has been an outstanding success,

WHEREAS, the druggists of Pine Bluff have been most courteous to the members of the Society and have been most generous in supplying the golf prizes,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the Pine Bluff Drug Association.

C. Pine Bluff Gun Club

WHEREAS, the 84th Annual Session of the Arkansas Medical Society just completed in Pine Bluff has been an outstanding success,

WHEREAS, the Pine Bluff Gun Club went to a great deal of trouble to organize a Turkey Shoot for Sunday, April 17th,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the Pine Bluff Gun Club.

D. Pine Bluff Country Club

WHEREAS, the 84th Annual Session of the Arkansas Medical Society just completed in Pine Bluff has been an outstanding success,

WHEREAS, the Pine Bluff Country Club has been most generous in providing both reciprocity for out-of-town club members, as well as making its golf course available for the Golf Tournament,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the Pine Bluff Country Club.

E. News Media

WHEREAS, the 84th Annual Session of the Arkansas Medical Society just completed in Pine Bluff has been an outstanding success,

WHEREAS, the Pine Bluff Commercial, the Arkansas Gazette, the Arkansas Democrat, Radio Station KCLA, KOTN, KPBA have made available to the Medical Society extended coverage of its meeting,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the News media mentioned above.

F. Committee on Arrangements, Jefferson County Medical Society

WHEREAS, the 84th Annual Session of the Arkansas Medical Society just completed in Pine Bluff has been a most successful meeting,

WHEREAS, the Host County Medical Society has gone out of their way to be most courteous to all of us in attendance at this meeting,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the Committee on Arrangements of the Jefferson County Medical Society.

G. Pine Bluff Chamber of Commerce

WHEREAS, the Chamber of Commerce has been most gracious in providing the Hospitality Center at the Pines Hotel,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the Chamber of Commerce.

H. Commercial Exhibitors

WHEREAS, the 84th Annual Session of the Arkansas Medical Society just completed in Pine Bluff has been an outstanding success,

WHEREAS, if it were not for exhibits by firms like yours, holding this meeting would have been extremely difficult,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the exhibitors.

I. Pines Hotel

WHEREAS, the 84th Annual Session of the

PROCEEDINGS

Arkansas Medical Society just completed in Pine Bluff has been an outstanding success,

WHEREAS, the management has been most successful in providing accommodations for the numerous sections and the numerous committee meetings and luncheons as well as for the general meetings,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to the Pines Hotel

J. Ministerial Alliance, Medical Assistants Society, Heart and Tuberculosis Associations; Woman's Auxiliary to the Jefferson County Medical Society

WHEREAS, the 84th Annual Session of the Arkansas Medical Society just completed in Pine Bluff has been an outstanding success,

WHEREAS, your group has contributed immeasurably to its outcome,

BE IT RESOLVED, that the House of Delegates express their thanks for the Medical Society to:

Trio Club
Ministerial Alliance
Medical Assistants Society
Heart and Tuberculosis Association
Woman's Auxiliary to the Jefferson County Medical Society

OFFICERS OF THE ARKANSAS MEDICAL SOCIETY 1960-1961

President	J. J. Monfort, Batesville
President-elect	William A. Snodgrass, Jr., Donaghey Bldg., Little Rock
First vice president	C. Randolph Ellis, Malvern
Second vice president	Kenneth R. Duzan, 427 West Oak, El Dorado
Third vice president	M. E. Blanton, Jonesboro
Secretary	H. Elvin Shuffield, Donaghey Bldg., Little Rock
Secretary Emeritus	W. R. Brooksher, 100 North 16th, Fort Smith
Treasurer	Ben N. Saltzman, Mountain Home
Speaker, House of Delegates	C. Lewis Hyatt, Monticello
Vice Speaker, House of Delegates	J. P. Price, Jr., Monticello
Journal Editor	Alfred Kahn, Jr., 1300 West Sixth, Little Rock
Delegates to AMA	J. M. Kolb, Clarksville; Fount Richardson, Fayetteville
Alternate Delegates to AMA	C. C. Long, Ozark; J. W. Kennedy, Arkadelphia
Executive Secretary	Mr. Paul C. Schaefer, P. O. Box 1345, Fort Smith

EXECUTIVE COMMITTEE OF THE COUNCIL

Chairman of the Council	Joe Verser, Harrisburg
President	J. J. Monfort, Batesville
President-elect	William A. Snodgrass, Donaghey Bldg., Little Rock
Secretary	H. Elvin Shuffield, Donaghey Bldg., Little Rock

COUNCILORS

Dis- trict	Councilor Term expires '61	Councilor Term expires '62	Counties in District
1.	Eldon Fairley Osceola	Joe Verser Harrisburg	Clay, Craighead, Crittenden, Fulton, Greene, Lawrence, Mississippi, Poinsett, Randolph and Sharp
2.	C. A. Archer, Jr. Conway	Hugh R. Edwards Searcy	Cleburne, Conway, Faulkner, Independence, Izard, Jackson, Stone, and White
3.	Fay B. Millwee McCrory	K. E. Beaton Wynne	Arkansas, Cross, Lee, Lonoke, Monroe, Phillips, Prairie, St. Francis, and Woodruff
4.	T. E. Townsend 1310 Cherry Pine Bluff	H. W. Thomas Dermott	Ashley, Chicot, Desha, Drew, Jefferson and Lincoln
5.	George C. Burton Med. Arts Bldg. El Dorado	J. L. Dedman 415 Hospital Dr. Camden	Bradley, Calhoun, Cleveland, Columbia, Dallas, Ouachita and Union
6.	Karlton H. Kemp 408 Hazel Texarkana	John P. Wood Mena	Hempstead, Howard, LaFayette, Little River, Miller, Nevada, Pike, Polk, and Sevier
7.	J. W. Kennedy Arkadelphia	H. King Wade, Jr. 231 Central Hot Springs	Clark, Garland, Grant, Hot Spring, Montgomery, and Saline
8.	Bill Dave Stewart Waldon Bldg. Little Rock	Robert D. Jones Waldon Bldg. Little Rock	Pulaski
9.	Stanley Applegate Springdale	Ross Fowler Harrison	Baxter, Benton, Boone, Carroll, Madison, Marion, Newton, Searcy, Van Buren, and Washington
10.	C. C. Long Ozark	L. A. Whittaker 621 South 21st Fort Smith	Crawford, Franklin, Johnson, Logan, Perry, Pope, Scott, Sebastian and Yell

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COMMITTEES

Arkansas Medical Society 1960-1961

COMMITTEE ON CANCER CONTROL

	Term Expires
Chairman—Jean Gladden, Harrison	1961
Howard S. Stern, Pine Bluff	1961
Masaaki Hara, Little Rock	1962
G. R. Siegel, Clarksville	1962
Holden C. McCraney, Fort Smith	1962
Edward M. Cooper, Jonesboro	1963
William B. Harrell, Texarkana	1963

COMMITTEE ON MEDICAL LEGISLATION

Chairman—Elvin Shuffield, Little Rock	1963
Karlton Kemp, Texarkana	1963
K. W. Cosgrove, Little Rock	1961
G. W. S. Ish, Little Rock	1961
R. B. Robins, Camden	1961
R. C. Dickinson, Horatio	1962
J. Arnold Henry, Russellville	1962
Joe F. Rushton, Magnolia	1962

COMMITTEE ON PUBLIC HEALTH (Also Rural Health Committee)

Chairman—Ben Saltzman, Mountain Home	1963
Edgar Easley, Little Rock	1961
Huie M. Smith, North Little Rock	1961
Donald E. Loveless, Booneville	1962
J. P. Williams, Brinkley	1962
O. J. T. Johnston, Batesville	1963

SUB-COMMITTEE ON MATERNAL AND CHILD WELFARE

J. F. Kelsey, Fort Smith	1961
J. E. Porter, Jr., Little Rock	1962
Charles P. Wickard, Little Rock	1963

SUB-COMMITTEE ON INDUSTRIAL HEALTH

Chairman—C. Randolph Ellis, Malvern	1962
J. Forrest Henry, Jr., Little Rock	1961
E. Frank Reed, Jr., Pine Bluff	1961
Chaney W. Taylor, Batesville	1962
H. E. Mobley, Morrilton	1963

SUB-COMMITTEE ON TUBERCULOSIS

Chairman—Harley C. Darnall, State Sanatorium	1963
Sanford C. Monroe, Pine Bluff	1961
Andrew A. Pringos, Little Rock	1961
David P. Hefner, Mena	1962
W. W. Workman, Blytheville	1962
Hugh A. Browne, Alexander	1963

SUB-COMMITTEE ON MENTAL HEALTH

Chairman—Hayden Donahue, Little Rock	1963
Byron A. Bennett, Little Rock	1961
William O. Young, Little Rock	1961
Charles D. Yohe, Hot Springs	1962
Dwight W. Gray, Marianna	1962
William Payton Kolb, Little Rock	1963

SUB-COMMITTEE ON LIAISON WITH THE STATE BOARD OF HEALTH

Chairman—William Myers Smith, North Little Rock	1961
W. R. Scarborough, Clarksville	1962
Hugh R. Edwards, Searcy	1963

POLIO ADVISORY SUB-COMMITTEE

	Term Expires
Chairman—Roger Bost, Fort Smith	1962
William P. Barron, Harrison	1961
Robert L. Henry, Jr., Little Rock	1961
R. H. Manley, Clarksville	1962
Barney Briggs, Little Rock	1963
Thomas E. Townsend, Pine Bluff	1963

COMMITTEE ON MEDICAL EDUCATION

Chairman—C. C. Long, Ozark	1961
Guy Farris, Little Rock	1962
Thomas H. Wortham, Jacksonville	1962
Hickman Calaway, Batesville	1963
Euclid M. Smith, Hot Springs	1963
Daniel H. Autry, Little Rock	1961

SUB-COMMITTEE ON POSTGRADUATE EDUCATION

Chairman—John T. Riggin, Jr., Little Rock	1961
C. C. Long, Ozark	1962
Willis Brown, Little Rock	1963

SUB-COMMITTEE ON AMERICAN MEDICAL EDUCATION FOUNDATION

Chairman—Joseph A. Norton, Little Rock	1962
J. H. McCurry, Cash	1961
Glenn Keller, Mountain View	1963

COMMITTEE ON HOSPITALS

Chairman—Guy Shrigley, Clarksville	1962
Julius H. Hellums, Dumas	1961
Robert L. McDonald, Pine Bluff	1961
A. E. Thorne, Van Buren	1962
Paul Gray, Batesville	1963
William L. Davis, Searcy	1963

SUB-COMMITTEE ON LIAISON WITH BLUE CROSS-BLUE SHIELD

Chairman—Albert S. Koenig, Fort Smith	1963
John Laurens, Little Rock	1961
T. E. Townsend, Pine Bluff	1961
J. Warren Murry, Fayetteville	1962
Russell W. Cobb, Malvern	1962
Henry Hearnberger, Jr., Stephens	1963

COMMITTEE ON PUBLIC RELATIONS

Chairman—Fount Richardson, Fayetteville	1962
Gilbert D. Jay, III, West Memphis	1961
T. S. Van Duyn, Stuttgart	1961
R. B. Robins, Camden	1962
C. Lewis Hyatt, Monticello	1963
Jimmie E. Lytle, Batesville	1963

SUB-COMMITTEE ON STATE HEALTH AND MEDICAL RESOURCES FOR CIVIL DEFENSE

Chairman—M. D. McClain, Little Rock	1962
Nicholas W. Reigler, Jr., Little Rock	1961
William C. Hensley, Charleston	1963

SUB-COMMITTEE ON LIAISON WITH AMS AUXILIARY

Chairman—James M. Kolb, Clarksville	1960
Co-Chairman—J. J. Monfort, Batesville	1960
C. C. Long, Ozark	1960
Louis K. Hundley, Pine Bluff	1960

PROCEEDINGS

ADVISORY COMMITTEE ON THE MEDICAL ASSISTANTS SOCIETY

	Term Expires
Chairman—James M. Kolb, Clarksville	1963
Perry J. Dalton, Camden	1961
Co-Chairman—Stanley Applegate, Springdale	1962

COMMITTEE ON VETERANS ADMINISTRATION AFFAIRS

Chairman—John W. Dorman, Springdale	1962
P. R. Anderson, Arkadelphia	1961
John D. Ashley, Newport	1963

COMMITTEE ON INSURANCE

Chairman—L. E. Drewrey, Camden	1963
Thomas D. Honeycutt, Little Rock	1961
H. E. Mobley, Morrilton	1962
Guy Farris, Little Rock	1963
Art Martin, Fort Smith	1961
Gilbert Jay III, West Memphis	1962

COMMITTEE ON ARRANGEMENTS FOR ANNUAL SESSION

Chairman—John P. Wood, Mena	1962
Thomas E. Townsend, Pine Bluff (Co-Chairman)	1962
Herbert Wineland, Pine Bluff	1962
Wright Hawkins, Fort Smith	1961
John D. Olsen, Fort Smith	1961
C. R. Ellis, Malvern	1961
Bill Dave Stewart, Little Rock	1963
Guy Farris, Little Rock	1963
Walter O'Neal, Little Rock	1963

COMMITTEE ON CONSTITUTIONAL REVISION COMMITTEE

Chairman—W. R. Brooksher, Fort Smith	
H. W. Thomas, Dermott	
H. King Wade, Jr., Hot Springs	
John M. Hundley, Little Rock	
W. J. Butt, Fayetteville	

BUDGET COMMITTEE (Council Committee)

Chairman—W. R. Brooksher, Fort Smith	
Louis K. Hundley, Pine Bluff	
(Resigned)—Sam Jameson, El Dorado	

SENIOR MEDICAL DAY COMMITTEE (Council Committee)

Chairman—W. R. Brooksher, Fort Smith	
Calvin R. Simmons, Pine Bluff	
Wayne P. Jones, Berryville	

COMMITTEE ON AGING

Chairman—James M. Kolb, Clarksville	1963
Ben N. Saltzman, Mountain Home	1961
Lon Reed, Hot Springs	1961
Euclid M. Smith, Hot Springs	1962
Gordon P. Oates, Little Rock	1962
Co-Chairman—L. E. Drewrey, Camden	1963

TRAFFIC SAFETY COMMITTEE

Chairman—C. Lewis Hyatt, Monticello	Permanent
Eldon Fairley, Osceola	1961
J. L. Dedman, Camden	1961
J. W. Kennedy, Arkadelphia	1961
Stanley Applegate, Springdale	1961
Hugh Edwards, Searcy	1963
Richard Logue, Little Rock	1963
J. G. Stuckey, Little Rock	1963
J. B. Wharton, Jr., El Dorado	1963

1960 OFFICERS — COUNTY MEDICAL SOCIETIES — ARKANSAS MEDICAL SOCIETY

ARKANSAS—Pres. C. W. Rasco, Jr., DeWitt	
Secy., E. Barrett Sparks, Stuttgart	
ASHLEY—Pres., E. C. Gresham, Crossett	
Secy., L. E. Edwards, Crossett	
BAXTER—Pres., S. W. Chambers, Mountain Home	
Secy., Walter Guinee, Mountain Home	
BENTON—Pres., Billy Joe Puckett, Siloam Springs	
Secy., James D. Huskins, Siloam Springs	
BOONE—Pres., William P. Barron, Harrison	
Secy., A. R. Hammon, Harrison	
BRADLEY—Pres., W. C. Whaley, Warren	
Secy., W. D. Robertson, Warren	
CARROLL—Pres., Oliver Wallace, Green Forrest	
Secy., W. A. Redman, Jr., Eureka Springs	
CHICOT—Pres., A. F. Rosendale, Eudora	
Secy., Wm. J. Weaver, Eudora	
CLARK—Pres., George Peeples, Gurdon	
Secy., H. D. Luck, Arkadelphia	
CLEBURNE—Pres., Claude Barnett, Heber Springs	
Secy., Nathan L. Poff, Heber Springs	
COLUMBIA—Pres., J. E. Alexander, Magnolia	
Secy., Charles L. Weber, Magnolia	
CONWAY—Pres., Charles F. Wells, Morrilton	
Secy., Gastor B. Owens, Morrilton	
CRAIGHEAD-POINSETT—Pres., Charles G. Swingle, Marked Tree	
Secy., J. H. McCurry, Cash	
CRAWFORD—Pres., Jack Thickston, Alma	
Secy., A. E. Thorne, Van Buren	
CRITTENDEN—Pres., M. D. Deneke, West Memphis	
Secy., James R. Fall, West Memphis	
CROSS—Pres., K. E. Beaton, Wynne	
Secy., Thomas G. Price, Wynne	
DALLAS—Pres., E. E. Estes, Fordyce	
Secy., John H. Delamore, Fordyce	
DESHA—Pres., Coree Biscoe, Dumas	
Secy., Guy U. Robinson, Dumas	
DREW—Pres., C. Lewis Hyatt, Monticello	
Secy., Van C. Binns, Monticello	
FAULKNER—Pres. Keller Lieblong, Conway	
Secy., John W. Sneed, Jr., Conway	
FRANKLIN—Pres., Wm. C. Hensley, Charleston	
Secy., David L. Gibbons, Ozark	
GARLAND—Pres., Joseph L. Rosenzweig, 238 Woodbine, Hot Springs	
Secy., James H. French, 101 Whittington, Hot Springs	
GRANT—Pres., Jack M. Irvin, Sheridan	
Secy., Miles F. Kelley, Sheridan	
GREENE-CLAY—Pres., A. E. Andrews, Paragould	
Secy., Omer E. Bradsher, Marmaduke	
HEMPSTEAD—Pres., C. Lynn Harris, Hope	
Secy., Lowell Harris, Hope	
HOT SPRING—Pres., R. V. McCray, Malvern	
Secy., John D. Wise, Malvern	

PROCEEDINGS

- HOWARD-PIKE—Pres., Ed G. Hopkins, Nashville
Secy., G. J. Floyd, Jr., Murfreesboro
- INDEPENDENCE—Pres., W. J. Ketz, Batesville
Secy., Jimmie E. Lytle, Batesville
- JACKSON—Pres., David Dawson, Newport
Secy., John D. Ashley, Newport
- JEFFERSON—Pres., Oliver C. Raney, 1021 Cherry, Pine Bluff
Secy., James B. Rice, 1125 Cherry, Pine Bluff
- JOHNSON—Pres., G. Reginald Siegel, Clarksville
Secy., Wm. R. Scarborough, Clarksville
- LAFAYETTE—Pres., Willie J. Lee, Stamps
Secy., Howard R. Harris, Lewisville
- LAWRENCE—Pres., Ralph Joseph, Walnut Ridge
Secy., Lloyd F. Gregory, Walnut Ridge
- LEE—Pres., Wm. C. Hays, Jr., Marianna
Secy., Floyd S. Dozier, Marianna
- LINCOLN—Pres., James Freeland, Star City
Secy., Richard C. Petty, Star City
- LITTLE RIVER—Pres., Joe G. Shelton, Ashdown
Secy., Herbert A. McPherson, Jr., Ashdown
- LOGAN—Pres., S. P. McConnell, Booneville
Secy., Charles McD. Smith, Paris
- LONOKE—Pres., H. E. McEntire, England
Secy., B. E. Holmes, Lonoke
- MADISON—Pres., Austin Smith, Huntsville
Secy., Charles B. Beeby, Huntsville
- MILLER—Pres., Frank P. Cantrell, 619 Main, Texarkana
Secy., N. L. Rodgers, 401 East 5th, Texarkana
- MISSISSIPPI—Pres., C. R. Cole, Blytheville
Secy., Eldon Fairley, Osceola
- MONROE—Pres., M. L. Dalton, Brinkley
Secy., N. C. David, Jr., Brinkley
- NEVADA—Pres., L. J. Harrell, Prescott
Secy., C. A. Hesterley, Prescott
- OUACHITA—Pres., J. B. Jameson, Jr., Camden
Secy., R. B. Robins, Camden
- PHILLIPS—Pres., H. B. Oldham, West Helena
Secy., C. M. T. Kirkman, Helena
- POLK—Pres., Frank A. Lee, Vandervoort
Secy., John P. Wood, Mena
- POPE-YELL—Pres., William L. McNamara, Russellville
Secy., W. E. King, Russellville
- PULASKI—Pres., Joseph A. Norton, Donaghey Building, Little Rock
Recording Secy., Walter H. O'Neal, 1120 Marshall, Little Rock
Executive Secy., Gaston G. Fulmer, Donaghey Building, Little Rock
- RANDOLPH—Pres., W. W. Scott, Pocahontas
Secy., John L. Wright, Pocahontas
- ST. FRANCIS—Pres., A. M. Bradley, Forrest City
Secy., Austin F. Barr, Forrest City
- SALINE—Pres., Curtis W. Jones, Jr., Benton
Secy., James C. Bethel, Bauxite
- SCOTT—Pres., Harold Bell Wright, Waldron
Secy., James A. Jenkins, Waldron
- SEARCY—Pres., H. J. Hall, Clinton
Secy., P. L. Evans, Marshall
- SEBASTIAN—Pres., E. Z. Hornberger, 500 Lexington, Fort Smith
Secy., Boyd Saviers, 1500 Dodson, Fort Smith
- SEVIER—Pres., James J. Greenhaw, DeQueen
Secy., Rodger Dickinson, DeQueen
- UNION—Pres., C. E. Tommey, 412 North Washington, El Dorado
Secy., J. F. Clark, 524 West Faulkner, El Dorado
- WASHINGTON—Pres., L. H. Siegel, 1031 North College, Fayetteville
Secy., Donald B. Baker, 212 North College, Fayetteville
- WHITE—Pres., S. J. Albright, Searcy
Secy., Hugh R. Edwards, Searcy
- WOODRUFF—Pres. Fred C. Inman, McCrory
Secy., C. E. Dungan, McCrory

36th Annual Session
Woman's Auxiliary
to the
ARKANSAS MEDICAL SOCIETY

Hotel Pines, Pine Bluff, Arkansas

April 18-19, 1960



MRS. C. C. LONG
Ozark

**President, Woman's Auxiliary to the
Arkansas Medical Society, 1960-1961**

PROCEEDINGS

PROCEEDINGS

36th Annual Session, Woman's Auxiliary to the Arkansas Medical Society

The Woman's Auxiliary to the Arkansas Medical Society met for the Thirty-sixth Annual Session in Pine Bluff, Arkansas, on April 18th and 19th.

Mrs. Paul Gray, president, called the Pre-convention Executive Board meeting to order at 8:00 A.M. Monday, in the Terrace Room of Hotel Pines. Following the board meeting Mrs. Gray opened the first general session in the Town Hall, National Bank of Commerce. Greetings from the Medical Society were extended by Dr. O. C. Raney, President, Jefferson County Medical Society, and Dr. Louis K. Hundley, Chairman, Advisory Committee to the Auxiliary, Arkansas Medical Society. Mrs. James Rhyne, immediate past president, Jefferson County Medical Auxiliary, gave the address of welcome and Mrs. H. W. Ward, Fayetteville, Fourth Vice-President, thanked the hostess group for the Auxiliary.

Mrs. Mason Lawson, Little Rock, past president, Woman's Auxiliary to A.M.A., introduced Mrs. Frank Gastineau, President, Woman's Auxiliary to A.M.A., guest speaker during the opening session.

Mrs. Gray introduced Mrs. Louis K. Hundley, Convention Chairman, and Mrs. E. L. Hutchison, Co-Chairman, Jefferson County Medical Auxiliary.

Honor guests at the opening session and for the entire convention were Mrs. Frank Gastineau, Indianapolis, Indiana, President, Woman's Auxiliary to the American Medical Association and Mrs. John Chenault, Decatur, Alabama, President, Woman's Auxiliary to the Southern Medical Association.

Delegates were formally seated and several recommendations from the board were passed without dissenting vote.

After hearing reports of officers and committee chairmen the meeting adjourned for lunch. Visitors and guests attended a progressive luncheon served in homes of local Auxiliary members.

A breakfast honoring past presidents was held in the home of Mrs. Louis K. Hundley at 8:00 A.M. April 19th.

The second general session was opened at 9:50 A. M. Tuesday by Mrs. Paul Gray, president. Dr. J. J. Monfort, President-elect, Arkansas Medical Society, and Mr. Paul C. Schaefer, Executive Secretary, brought greetings from the Medical Society. Mrs. R. K. Atkinson, Councilor from Arkansas to Southern, introduced the guest speaker, Mrs. John Chenault, President, Woman's Auxiliary to the Southern Medical Association, who addressed the group.

Reports of County Presidents were heard at this session.

The following slate of officers for 1960-1961 was read and elected unanimously:

President—Mrs. C. C. Long, Ozark

President-elect—Mrs. H e r s h e l Wilmoth, Glenwood

First Vice-President—Mrs. P o r t e r Rodgers, Searcy

Second Vice-President—Mrs. E r n e r Jones, Little Rock

Third Vice-President—Mrs. Peter Trinca, El Dorado

Fourth Vice-President—Mrs. William Breit, Harrison

Recording Secretary—Mrs. L. A. Whitaker, Jr. Fort Smith

Treasurer—Mrs. W. G. Cooper, Little Rock

These officers were installed after the Tuesday luncheon by Mrs. Jack Kennedy, Arkadelphia, past president, Woman's Auxiliary to the Arkansas Medical Society.

A buffet luncheon and Paris Fashion Show were held at the Pine Bluff Country Club.

Certificates of Achievement were presented to the following Auxiliaries for their contributions to the American Medical Education Foundation Fund: Union County, first place, Clark County, second, Independence County, third place.

The annual session closed with a Board meeting immediately following the luncheon, at which Mrs. C. C. Long, new president, presided.

Mrs. A. J. Forestiere
Recording Secretary

Substitutes for Renal Functions

ALFRED KAHN, JR., M.D.

There has been much progress in the study of renal disease. Perhaps one of the most interesting developments is the use of the artificial kidney to remove noxious substances from the blood. Kolff popularized and developed the use of the artificial kidney. He recently summarized his experience in acute renal failure (*Arch. Int. Med.* Vol. 102, p. 871, Dec., 1958). Using his technique and the twin coil apparatus, there was an overall recovery rate of 52%; several of the patients needed multiple dialyses and age was not apparently a barrier to treatment. The cases included post traumatic types, post-operative cases, hemolytic transfusions, nephrotoxic injuries, eclampsia, sepsis, peritonitis, etc. It is interesting that their survival rate bore no relationship to the height of the blood urea or the degree of oliguria. Even more recently Anderson & Kolff (*Ann. Int. Med.* Vol. 51, p. 476, Sept., 1959) have reported on the use of the artificial kidney in treating the uremia of acute glomerulo nephritis; others have reported this but there has been a tendency to veer from this because of a tendency to aggravate hypertension and the fear that heparin might produce cerebral hemorrhage; the latter was overcome by simply using regional heparinization; the former by avoiding overhydration and low blood sodium and the use of ganglion blocking agents. Although the artificial kidney is commercially available, it requires much attention in its use—probably more than available in most hospitals.

Because of the complexity of the artificial kidney, the need for a carefully trained team, blood units to prime the machine, and other expenses, simpler means of dialysis have been sought. Probably the simplest effective means is peritoneal dialysis and this has recently been described in very simplified form by Maxwell et al. (*J.A.M.A.*, Vol. 170, p. 917, June 20, 1959). Using their technique

dialysis can be started in 30 minutes. The equipment is simple, consisting of commercially prepared solutions put up in liter flasks like intravenous solutions. Two bottles are connected by Y-tube to a nylon catheter; a trochar is used to make a small hole in the abdominal wall, and the catheter is then pushed through the trochar into the peritoneal cavity; the catheter, now connected to the Y-tube, directs the fluid into the abdomen. After leaving the dialyzing fluid in the abdomen for 1 hour, the bottles are lowered to the floor and the fluid drains back into the same bottles. This may be kept up for 12 to 36 hours. The authors claim a mechanically successful dialysis in 76 patients, and report 6 failures, usually due to adhesions.

Schloerb (*Arch. Int. Med.*, Vol. 102, p. 914, Dec., 1958) has reviewed briefly both peritoneal dialysis and methods of intestinal perfusion. In the latter, the gastrointestinal mucosa is employed as a dialyzing membrane. There are many variations including: gastric or duodenal aspiration, gastric lavage and enemas, Von exchange resins orally or rectally, intubation with multiple lumen tube with jejunal perfusion and ileal aspiration, duodenal or jejunal perfusion with rectal; or appendicostomy collection, appendicostomy with large bowel perfusion, and others. These methods seem best suited to acute renal failure. For chronic renal failure, Schloerb suggests Kolff's idea of isolating a loop of ileum and intermittently perfusing it at weekly intervals; he states, "Total renal function is not attained because of failure to remove adequate amounts of phosphate, creatinine, uric acid, and probably other uremic elements. It will depend the composition of the extra cellular fluid and, indirectly intracellular constituents as well as body water, and will remove sufficient urea

to maintain an acceptable nitrogen economy."

The point of greatest interest is that there are both elaborate and simple means of obtaining substitute kidney function. The use of the more elaborate artificial kidney requires so many skilled persons in constant attendance that its use is necessarily confined to large medical centers. Peritoneal dialysis and gastrointestinal dialysis can be performed in smaller installations but there has to be an adequate laboratory for some biochemical control of electrolytes. This type of therapy should be considered in any case of acute renal failure and in occasional cases of slowly progressive chronic renal failure.

RESOLUTION

Whereas God in his infinite wisdom has seen fit to take from this life Dr. James T. Wortham in the prime of a fruitful life, and

Whereas Dr. Wortham was a staunch and participating member of his church, a kind and devoted husband and father, and

Whereas, even though his time was short, Dr. Wortham served the people of this community in the practice of medicine and other endeavors with great skill, and

Whereas, Dr. Wortham was highly respected by his office staff and by those of us closely associated with him in the practice of medicine, and

Whereas, Dr. Wortham's many devoted friends and patients will long remember the excellent quality and character of his friendship and services, and

Whereas, many people of many types and conditions will miss him and regret his passing, therefore

Be it resolved, by the Pulaski County Medical Society, of which Dr. Wortham was a member, that we are sorrowed by his departure,

That we extend our deepest sympathy to Mrs. Wortham, his children and his many friends,

That we shall forward a copy of this resolution to Mrs. Wortham,

That we shall incorporate this resolution in the minutes of the Society, and

That we shall cause the resolution to be published in the Journal of the Arkansas Medical Society.

Inscribed by a Special Committee,

W. M. Hamilton, Chairman

Read and approved

April 5, 1960.

MEDICINE IN THE NEWS

Law Suits Against Doctors Unavoidable

CHICAGO — Even if physicians practice the highest type of medicine, there is no guarantee that they will not be sued, according to Melvin M. Belli, famous San Francisco attorney.

In an interview just published in the current (April) NEW PHYSICIAN, official journal of the Student American Medical Association, Melvin Belli advised young doctors, "Practice good ethical medicine, with both eyes on the patient, and not one eye on the dollar and one eye on the patient, and you will have less chance of being sued for malpractice."

"I won't guarantee that you won't be sued, even if you practice the highest type of medicine in the above regards, but your conscience will be clear, which is quite an asset when you go to jury trial," Mr. Belli added.

In speaking of the implied warranty involved when a doctor takes a case, Mr. Belli emphasized that doctors must not make contracts with patients which, for example, might say, "if you take a spinal anesthesia, nothing will happen to you."

Mr. Belli told of a physician who did make such a contract with a couple for a Caesarean section. When delivery time came, the obstetrician used his best medical judgment, and without any negligence whatsoever, had the misfortune to deliver a dead child. The patient sued the doctor and recovered \$5,000 for breach of contract, even though no negligence on the part of the doctor was claimed.

When an intern (a graduate physician taking an extra year of hospital training)

asked Mr. Belli what doctors should do if they acquire a patient they feel was not treated properly by another physician, Mr. Belli answered, "Why don't you both go to confession on Sunday."

Another intern wanted to know how to treat an accident case where the patient refuses to allow the doctor to perform a comprehensive examination. "You couldn't treat properly a person who couldn't be examined with ordinary care," said Mr. Belli.

"Where is the liability if a patient disregards instructions and suffers untoward results?" asked a third intern. According to Belli, known as the most prominent lawyer in medical cases, "If the instructions (given to the patient) were proper, no liability would attach to the doctor."

Mr. Belli commented that he turns down more malpractice cases than any other lawyer. If doctors would only help educate lawyers, Mr. Belli feels there would be far fewer medical lawsuits.—From the Student American Medical Association, 430 North Michigan Avenue, Chicago 11, Illinois, phone: DElaware 7-2544.

International Medical Advisory Bureau

The Council of the British Medical Association has established an International Medical Advisory Bureau with a view toward welcoming and providing a personal advisory service to medical practitioners visiting the United Kingdom. The Bureau is located at British Medical Association House, Tavistock Square, London, W.C.1.

One of the main objects of the Bureau is to welcome the overseas medical visitor, who is cordially invited to visit the Bureau as soon as possible after arrival and talk over with the Medical Director any points on which he may need advice or assistance.

Hospital Beds

Although hospital construction is at an alltime peak, the number of hospital beds in the U. S. is not increasing much faster than the nation's population, the Health Insurance Institute reported today.

From the beginning of 1948 to the beginning of 1959, civilian hospital beds

increased by 30 per cent while the population climbed 20 per cent, said the Institute.

The Public Health Service gave this explanation for the postwar boom in hospital construction:

"During World War II and for most of the depression decade preceding the war, hospital construction was curtailed, piling up a serious backlog of need. After the war when money, men, and materials became available for peacetime development, a great upturn in hospital construction took place."

The government agency reported that in 1958, more than \$1 billion was spent on the construction of civilian hospitals, exceeding the previous high of \$947 million in 1951.

When 1959 began, the nation had 1,322,000 hospital beds, up from 1,017,000 in 1948, in addition to nearly 246,000 beds in nursing homes and 134,000 beds for civilians in Federal hospitals.

The hospital beds were divided into 653,000 in general hospitals, 534,000 in mental hospitals, 51,000 in chronic hospitals, and 84,000 in tuberculosis hospitals.

The greatest growth from 1948 to 1959 was shown by the general and chronic hospital beds, said the Institute. The number of general hospital beds increased 39 per cent while chronic hospital beds went up 42 per cent.

Mental hospital beds rose 25 per cent. However, the number of tuberculosis beds increased less than one per cent during the period, and actually declined from a peak of more than 101,000 beds in 1954, which may be reflection of the success medical science is meeting in its fight against the disease.

In a state-by-state breakdown, New York, the nation's most heavily populated state, had the most beds in each of the four hospital categories. New York had 83,000 beds in mental hospitals, 69,000 beds in general hospitals, 7,000 chronic hospital beds, and 9,000 tuberculosis hospital beds.

New York was not the only place to have more mental hospital beds than general hospital beds. Others were Connecticut, Massachusetts, New Hampshire,

FEATURES

Rhode Island, Vermont, Maryland, New Jersey and the District of Columbia.

Illinois led the nation in the number of nursing home beds, 23,000. California, where a large proportion of the population is elderly, followed with 21,000 and New York was third with 16,000, said the Institute. The total of these beds has increased 13 per cent in the space of two years, from 218,000 to 246,000.

The number of persons entering hospitals has risen steadily. According to the American Hospital Association, admissions to the nation's non-federal short-term general and special hospitals, which excludes mental and tuberculosis hospitals, totaled nearly 22 million in 1958,

almost 700,000 more than the year before. —From: Health Insurance Institute, 488 Madison Avenue, New York 22, New York.

The Month in Washington

Washington, D. C.—Defeat of the Forand bill in the House Ways and Means Committee highlighted developments on the issue of legislation to provide more Federal health care for the aged.

The Committee voted 17 to 8 on March 31 to shelve the Forand bill which would increase Social Security taxes to provide surgical benefits and limited hospitalization and nursing home care for Social

How Major Voluntary Health Agencies Spend Their Money

Name of Agency	Funds Raised	Fiscal Year Ending	Percentage of Funds Spent in Last Budget Year					
			Medical Treatment	Research Grants	Lay and M.D. Education	Community Services	Fund Raising	Other Purposes
National Foundation	\$34,000,000	1/31/59	53%	12%	11%	7%	13% (4.7*)	4%
American Cancer	\$30,373,000	8/31/59		30	28	24	10	8
National Tuberculosis Christmas Seal	\$25,955,390	3/31/59	2	3	34	24	15	22
American Heart	\$24,004,865	6/30/59		37.5	22.5	14.5	13	11.8
National Society for Crippled Children and Adults	\$16,791,850	8/31/59	60.3**	2	7.4	3.3	15	12
United Cerebral Palsy	\$ 9,508,000	9/30/59	35	7	13	29	11	5
National Assoc. for Mental Health	\$ 5,510,470	12/31/59		22	38	19	7	14
Muscular Dystrophy Assoc. of America	\$ 5,508,618	3/31/59	22	42	10	7	13	6
Sister Elizabeth Kenny Foundation	\$ 4,975,000	12/31/59	47	16	24	1	9	3
Arthritis and Rheumatism Foundation	\$ 3,605,612	6/30/59	30	29	11		14	16

*Headquarters only.

**Includes sizeable expenditures classifiable also as "Community Services".

The above is compiled by the American Association of Fund Raising Counsel, with the cooperation of the agencies. Since there is no standard form of accounting, these reports are not necessarily entirely comparable.

Security beneficiaries, except the disabled.

However, the issue remained very much alive.

The Eisenhower Administration and Congressmen were separately considering various alternative proposals to provide additional health care for the aged, but outside the Social Security system. And the action of the House Committee did not rule out the possibility of Forand-type legislation being brought up in the Senate later this session.

The House Committee vote against the Forand bill came during the drafting of an omnibus measure of revisions in the Social Security program. The Committee voted tentatively to bring physicians under Social Security.

The Committee also favored elimination of the requirement that a disabled person must be 50 years or older to be eligible for Social Security payments.

Arthur S. Flemming, Secretary of Health, Education and Welfare, said the Administration was considering a plan for Federal payments to the states to help needy old persons buy private health insurance on a voluntary basis. He said he hoped the plan would be ready for submission to Congress by late April.

Sen. Jacob K. Javits (R., N. Y.) and seven other Republican Senators introduced similar legislation in the Senate. The bill called for the Federal government and states jointly putting up about \$1 billion a year to help persons 65 years and older, and their spouses, to buy private health insurance. The coverage would include physicians' care in home and office, diagnostic services, hospitalization and nursing home care.

Another plan being considered by some other members of Congress would broaden the Federal-State public assistance program to provide more health care for needy older persons.

Both President Eisenhower and Vice President Nixon reiterated their opposition to any compulsory health plan such as the Forand bill. The President told a news conference that such plans would be a definite step toward socialized medicine. He proposed that medical care for the aged be improved through further de-

velopment of voluntary health insurance programs.

Vice President Nixon gave his position in a letter to physicians who had communicated with him about the matter.

"The Vice President, throughout his career as a public official, has consistently opposed and will continue to oppose any compulsory health insurance program," the letter said. "This, of course, includes the Forand bill . . ."

"He believes that the best way to handle the problem of people over 65 who do not have and cannot afford health insurance is through a program which will enable those who desire to do so to purchase health insurance on a voluntary basis."

On the other side, three candidates for the Democratic nomination for President — Sens. John F. Kennedy (Mass.), Hubert H. Humphrey (Minn.) and Stuart Symington (Mo.) — said they would push for passage of Forand-type legislation.

The AFL-CIO continued its all-out campaign in support of the Forand bill. Leaders of the labor union repeatedly attacked the American Medical Association for opposing the bill.

One of the attacks prompted Dr. Louis M. Orr, Fla., to protest in a letter to AFL-CIO President George Meany against the union's "deliberate distortions of the truth, perversions of the truth, and outright untruths."

Dr. Orr charged that allegations in a political memorandum of the AFL-CIO's Committee on Political Education (COPE) "not only . . . attempt to impugn the motives and competence of the nation's physicians, but they seek to mislead labor's rank and file, the members of Congress, and the American people as a whole."

"When the AMA opposes any legislative health measure, it does so because its members believe that it would lead to poorer — not better — health care for the people of this country," Dr. Orr said.

Senate Republican Leader Everett M. Dirksen (Ill.) also defended the AMA as well as the Eisenhower Administration, against the attacks when AFL-CIO leaders repeated them in testimony before the

Senate Subcommittee on Problems of the Aged and Aging.

Sen. Dirksen denounced them as "gratuitous slurs," "stinking statements," "invidious . . . insane charges" which constituted "an absolute disservice to the country."

Dr. James A. Appel, Lancaster, Pa., a member of the AMA Board of Trustees, testified before the Senate Subcommittee that the greatest health problem faced by older people is "their isolation from the rest of society." He said:

"The health problems of the aged can only be solved within the context of total health. They involve far more than hospitals or a doctors' care. They involve the older person's other requirements in life, whether these be housing, recreation, community understanding and acceptance, the right to be useful, the courtesy of being treated as individuals, or the opportunity of living as self-reliant, respected members of society."

As for an aged person being denied medical care because of a lack of money, Dr. Appel said emphatically:

"Medical care is available to every man, woman, and child in the United States regardless of his or her ability to pay for it.

"That care is not now denied, nor will it be denied."

Unique Foreign Fellowship Program To Send Medical Students To Remote Areas

EVANSTON, Ill., April 6 — A unique fellowship program designed to further medical education by sending future doctors to remote areas of the world was announced today by the Association of American Medical Colleges.

Dr. Ward Darley, executive director of the AAMC, said the program would "Enable selected medical students to gain wide clinical experience as well as assist in the continuing war against disease in the backward areas of the world."

The three-year program, established under a \$180,000 grant from Smith Kline & French Laboratories, is open to all medical college students who have completed

their third year of study, Dr. Darley said. Scheduled to begin this summer, the program will permit an average of 30 students to participate each year.

Dr. Gustave Dammin Elected President of the Armed Forces Epidemiological Board

Dr. Gustave J. Dammin, Professor of Pathology, Harvard Medical School, has been elected President of the tri-service Armed Forces Epidemiological Board (AFEB), the Army Surgeon General's Office announced today.

Dr. Dammin took his M.D. from Cornell University Medical College in 1938, and is well known in Government. He is Consultant in Pathology to The Surgeon General, Department of the Army; Consultant to The Surgeon General, Public Health Service, and Laboratory Consultant to the Office of Civil and Defense Mobilization.

Dr. Dammin served in the U. S. Army during World War II, winning the Legion of Merit. He is a Colonel in the U. S. Army Reserve.

Selective Service

The Armed Forces continue to require the services of most physicians liable for military service under the Universal Military Training and Service Act.

Lt. General Lewis B. Hershey, Director of Selective Service, issued this reminder to physicians when it became apparent recently that the Armed Forces would not call to active duty a small number of physicians in a few specialties who had been deferred for residency training under the Armed Forces Reserve Medical Officer Commissioning and Residency Consideration Program.

All reserve officers deferred for residency in most specialties will be called.

* * *

The Independence County Committee on Aging is expanding to include a member elected from each civic club in the county. The Committee is garnering all the information available concerning the assistance rendered to Senior Citizens of the county, and to determine what further assistance should be rendered.

About 40 members of the Southern Gynecologic and Obstetric Society from 13 states attended a March meeting at the University Medical Center, Little Rock. "Grid" therapy is a new technique for treatment of cancer, according to Dr. Willis E. Brown, professor and head of the department of obstetrics and gynecology at the Medical Center. Surgery via closed circuit television highlighted one session of the meeting, and another session included studies in cancer and a discussion of the tumor clinic by Dr. Charles R. Henry. Dr. James Mashburn is president of the organization and Dr. James B. Kittrell is president-elect.

* * *

The American College of Obstetricians and Gynecologists announce the following list of recently installed officers: President, Dr. C. Paul Hodgkinson of Detroit, chairman of the Department of Gynecology and Obstetrics, Henry Ford Hospital; first vice president, Dr. George E. Judd, Los Angeles; second vice president, Dr. Howard C. Taylor, Jr., New York; Treasurer, Dr. Axel N. Arneson, St. Louis; Secretary, Dr. Craig W. Muckle, Philadelphia; Assistant secretary, Dr. Sprague H. Gardiner, Indianapolis. The college has set up a Higher Education Loan Program (H-E-L-P) to enable resident physicians to complete their training in obstetrics and gynecology. Loans up to \$5,000 will be made to help physicians through their specialty training period and early practice. For information, write to Mr. Donald F. Richardson, Executive Secretary, ACOG, 79 West Monroe Street, Chicago 3, Illinois.

ANNOUNCEMENTS

The 23rd annual exhibition of art works by American physicians will be held June 13 through June 18, 1960 at the Miami Beach Exhibition Hall and Auditorium. Held in conjunction with the annual convention of the American Medical Association, the show will include over 300 works of art in oil water color, sculpture, crafts, photography and lithography.

Participants and prospective exhibitors may obtain further information from Dr. Kurt F. Falkson, 7 East 78th Street, New York City, Secretary of the American Physicians Art Association.

* * *

The University of Illinois College of Medicine, Department of Otolaryngology will offer an intensive postgraduate basic and clinical program for practicing otolaryngologists. The Assembly offers a compact program of one week of daytime and evening sessions, September 24 through 30, 1960.

Interested physicians should write direct to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois.

* * *

The 67th Annual Convention of the Association of Military Surgeons of the U. S. will be held October 31st, November 1st and 2nd, 1960 at the Mayflower Hotel, Washington, D. C.

Obituary

Dr. Eric Otto Underwood, 70 years old resident of Waveland, Arkansas died March 21, 1960 following a long illness. Dr. Underwood was a member of the Church of Christ. He is survived by his wife, one son and two daughters. The body was taken to Russellville, Arkansas, for funeral and burial services.

Personal and News Items

Dr. M. C. Hawkins, Jr., Surgeon, Hawkins Hospital, Searcy, Arkansas and Associate Clinical Professor of Surgery (part time), University of Arkansas Medical Center, was elected Vice President-elect of the ten state Southwestern Surgical Congress during its annual scientific meeting in Las Vegas, Nevada, 27th through the 31st of March, 1960.

Dr. Fred Krock of Fort Smith has been president of the organization for the past

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year, and presided during the recent meeting. Dr. Jean Gladden, Harrison, Arkansas was appointed Councilor from Arkansas, replacing Dr. M. C. Hawkins Jr., whose term has expired. Among those present from Arkansas were the following: Dr. William J. Fink, Dr. James D. Finfrock, Dr. Gladden, Dr. Harry Hayes, Dr. Haymond Harris, Dr. Hawkins, Dr. Wesley Ketz, Dr. Krock, Dr. John D. Olson, Dr. J. P. Price, Jr., Dr. Joe Rushton, Dr. Harold White, Dr. Carl L. Wilson, Dr. Morton C. Wilson, Dr. Wright Hawkins and Dr. Boyd Saviers.

Dr. W. E. Phipps has filed for re-election as alderman in North Little Rock. Dr. Phipps has been on the City Council since January, 1957 and served on the North Little Rock School Board for seven years. He sparked the drive for a bond issue to pay for construction of a hospital in the city.

Dr. Wayne Glenn, resident physician at the Medical Center in Little Rock, will open his office for the practice of medicine in Walnut Ridge this summer. Dr. Glenn is a graduate of the University of Arkansas School of Medicine.

Dr. Swan Moss, Dr. Lee Parker, Jr., Dr. H. T. Smith and Dr. Lonnie Turney of McGehee were among 35 physicians of Southeastern Arkansas who attended a postgraduate seminar in Monticello in March. The seminar was sponsored by the Arkansas Academy of General Practice. Dr. James Taylor, Associate Professor of Medicine at the University of Arkansas School of Medicine, Dr. Henry Claggett of Wilmington, Delaware, Dr. William Reese, Professor of Psychiatry at the University Medical Center, and Dr. Theodore Watters of New Orleans were the speakers for the seminar.

Arkansas officers of the Southern Medical Association, both past and present, honored Dr. William Thomas Lowe of Pine Bluff with a breakfast during the April meeting of the Arkansas Medical Society. Dr. Lowe was presented an honorary

membership recognizing his 48 years as a member of the Southern Medical Association.

Dr. R. B. Robins of Camden, who represents the Rock Island, the Missouri Pacific and the Cotton Belt railroads, was elected Vice-President of the American Association of Railway Surgeons at its recent annual convention in Chicago.

Dr. Guy U. Robinson of Dumas served as first alternate delegate to the Congress of Delegates of the American Academy of General Practice held at Philadelphia, Pa., in March. Other Arkansas delegates were Dr. James Kolb of Clarksville and Dr. Randolph Ellis of Malvern.

Dr. Fount Richardson, head physician at the University of Arkansas, has traveled nearly 50,000 miles this year in his duties as chief executive of the AAGP.

Dr. R. B. Robins, Local physician at Camden, and former Democratic Committeeman for the state, has been asked to serve as Chairman of the National Committee of Physicians for Senator Lyndon B. Johnson for President.

Some of the nation's outstanding orthopedic Surgeons spent three days in Arkansas in March at the national meeting of the Association of Bone and Joint Surgeons. Several Little Rock surgeons were among the lecturers. Included were Dr. Richard M. Logue, Dr. Kenneth G. Jones, Dr. Samuel B. Thompson, Dr. John M. Hundley and Dr. Paul H. Williams.

Dr. John F. Guenther of Mountain Home was appointed to the Arkansas State Medical Board on March 14 by Governor Orval E. Faubus. Dr. Guenther has practiced medicine and surgery since 1936. He is also vice president of the Baxter County Medical Society.

A degree as a Fellow in the American College of Physicians was recently received by Dr. J. E. Doherty, Jr. Dr. Doherty is a heart specialist at the Veter-

ans Hospital in Little Rock and a specialist in internal medicine.

An official visit to the South Arkansas Shrine club at the Ladies' Night meeting in Magnolia was made by Dr. Gordon P. Oates, illustrious potentate of Scimitar Temple AAONMS, in March. Dr. Oates is presently an instructor of surgery at the University School of Medicine.

New officers of the Woodruff County Unit of the American Cancer Society include Dr. Fay B. Millwee of McCrory, president, and Dr. Victor Ferrari of Augusta, Chairman of publicity and education.

Dr. Eugene Crawley, chairman of the school health committee of the Arkansas Medical Society, addressed a conference on School Health, held at Arkansas State Teachers College Student Center, on "A Physician Challenges School Health Programs."

Others taking part in the conference on a panel were Jefferson Farris Jr., director of Public Health Education; Jeff Farris Sr., head of the ASTC physical education department; Miss Sarah L. Butler, state Board of Health; Dr. Dee W. Halbrook of Conway, Dr. Maurice Friedman of Little Rock, and Dr. Curtis Emery of the University of Arkansas.

Thirteen physicians who have been practicing from fifty to sixty years each, and who are members of the Fifty Year Club, were entertained at a breakfast during the April meeting of the Arkansas Medical Society. Dr. John Waugh of Rochester, Minnesota, Mr. Paul Schaefer, Executive Secretary of the Arkansas Medical Society and Dr. R. B. Robins of Camden were on the program. Dr. J. J. Monfort presented each member present with a certificate of appreciation. Dr. W. A. Fowler of Fayetteville was declared President of the Club, and Dr. Davis W. Goldstein of Fort Smith President-elect.

New Members . . .

A new member of the Pulaski County Medical Society is **Dr. Harold D. Langston**. He is a native of Van Buren and received his preliminary education at the University of Arkansas from which he received a B.S. degree. His M.D. degree was received from the University of Arkansas School of Medicine in 1955. Dr. Langston is a radiologist and is associated with the Arkansas Baptist Hospital.

Dr. Louis E. Tolbert is a new member of the Pulaski County Medical Society. He is a native of Douglasville, Georgia, and received his preliminary education at the Emory University in Atlanta, Georgia. He was graduated from the University of Tennessee College of Medicine in 1950. Dr. Tolbert practiced at the Ochsner Clinic, New Orleans, Louisiana, the past 5½ years. He is an Internist with his office in the Donaghey Building in Little Rock.

Dr. Rodney Fitzgibbon is a new member of the Pulaski County Medical Society. He is a native of Little Rock and received his preliminary education at the Ouachita Baptist College in Arkadelphia from which he received a B.S. degree. Dr. Fitzgibbon was graduated from the University of Arkansas School of Medicine in 1955. He is now associated with the University of Arkansas Medical Center.

Dr. Mario A. Accinno is a new member of the Sebastian County Medical Society. He is a native of New York. His preliminary education was obtained at the University of Alabama from which he received an A.B. degree. He was graduated from the Chicago Medical School in 1938. Dr. Accinno is an Orthopedic Surgeon and is associated with the Cooper clinic. Before moving to Fort Smith he practiced at the following places: Industrial and traumatic surgery at Thuss Clinic, Birmingham, Alabama, from January 1943 to February 1953; in the Armed Forces, February 1943 through 1947; occupa-

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tional and traumatic surgery at the Thuss Clinic, Birmingham, Alabama, 1947 through December 1953; in January 1953 resumed orthopedic residency at Crippled Children's Hospital, Birmingham, Alabama for one year; in January 1954 Basic Science Course as related to orthopedics at New York City Bellevue Medical Center; in July 1954, through December 31, 1955, senior resident in orthopedics at the University of Alabama Medical Center, University Hospital and Hillman Clinic; acting chief of Orthopedics, Birmingham Veterans Hospital, January 1956 through 1959; private practice from 1956 through February 1959 in Birmingham, Alabama.

Dr. Donald J. McMinimy is a new member of the Sebastian County Medical Society. He is a native of Wichita, Kansas, and received his preliminary education from the University of Wichita and his M.D. degree from the University of Kansas. Dr. McMinimy practiced at the Wichita, Kansas, Veterans Administration Hospital from 1948 to 1959. His specialty is Internal Medicine and he is now associated with the Holt Krock Clinic.

A new member of the Sebastian County Medical Society is **Dr. Stonie R. Cotton**. Dr. Cotton was born in Waco, Texas, and received his preliminary education at the Baylor University from which he received an A.B. degree. His M.D. degree was received from the Baylor University College of Medicine in 1953. He served a residency in Oklahoma City and Houston and then served with the Air Force in Denver. Dr. Cotton is an orthopedic surgeon associated with the Holt-Krock Clinic in Fort Smith.

Dr. Harold E. Martin is a new member of the Washington County Medical Society. He is a native of Mitchell, South Dakota, and received his preliminary education at the University of Wisconsin. His Medical Education was obtained from the Marquette University in Milwaukee, Wisconsin, from which he was graduated in 1940. Dr. Martin has practiced at his present location for 4 years. He is an orthopedic surgeon with his office at the V.A. Hospital in Fayetteville.

Dr. E. N. McCullum is a new member of the Benton County Medical Society. His preliminary education was obtained at the Arkansas Teachers College at Conway, Arkansas. His medical education was obtained at the University of Arkansas Medical School in Little Rock in 1958. Dr. McCullum interned at the St. Vincent Infirmary and now has opened his office in Decatur, Arkansas.

Dr. Marvin L. Murphy is a new member of the Benton County Medical Society. He is a native of Woodston, Kansas, and received his preliminary education from the Kansas University. He was graduated from the Kansas University School of Medicine in 1956. Dr. Murphy's specialty is internal medicine and he has opened his office in Siloam Springs.

Dr. Herman D. Alston, Jr., is a new member of the Craighead-Poinsett County Medical Society. He is a native of Leachville, Arkansas, and received his preliminary education from the University of Arkansas from which he received a B.S. degree. He was graduated from the University of Arkansas School of Medicine in 1953. Dr. Alston completed residency in Dermatology in February 1960. His office address is 802 Jeter Drive, Jonesboro.

A new member of the Crittenden County Medical Society is **Dr. H. G. Lanford**. He is a native of Brownwood, Texas, and received his preliminary education from Texas Teachers College. His M.D. degree was obtained from the University of Tennessee in 1946. Dr. Lanford has practiced in Memphis, Tennessee, and Holly Springs, Mississippi. He is a surgeon with his office at 308 S. Rhoder, West Memphis, Arkansas.

Dr. Lowell O. Harris is a new member of the Hempstead County Medical Society. He is a native of Bradford, Arkansas, and received his preliminary education from the University of Arkansas at Fayetteville in which he received a B.S. degree. He was graduated from the University of Arkansas School of Medicine

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in 1956. Dr. Harris was in the U. S. Army from January 1958 to January 1960. He is a general practitioner with his office at 205 So. Elm, Hope, Arkansas.

A new member of the Garland County Medical Society is **Dr. William J. Grippe**. He is a native of Chicago, Illinois, and received his preliminary education from the Crane Jr. College and Illinois Dental College, Chicago. His medical education was obtained at the University of Illinois College of Medicine from which he was graduated in 1940. Dr. Grippe has practiced at the following locations: Princeton, N. J., 1954-1959; Philadelphia, 1951-1954; Washington 1948-1951; Chicago 1946-1948; and was in military service from 1942-1946. He is a radiologist with his office in the Medical Arts Building, Hot Springs, Arkansas.

A new member of the Pope-Yell County Medical Society is **Dr. James O. Pennington**. He is a native of Dardanelle, Arkansas, and received his preliminary education from Arkansas Teachers College at Russellville. His medical education was obtained at the University of Arkansas School of Medicine from which he was graduated in 1958. Dr. Pennington is a general practitioner with his office in Ola, Arkansas.

Dr. T. D. Robertson is a new member of the Pope-Yell County Medical Society. He is a native of Moyers, Arkansas, and received his preliminary education at the Arkansas Teachers College in Russellville. He received his M.D. degree from the University of Arkansas School of Medicine from which he was graduated in 1958. Dr. Robertson is a general practitioner and practiced one and one-half years in North Little Rock before moving to Atkins, Arkansas.

Dr. E. A. Shaneyfelt is a new member of the Mississippi County Medical Society. He is a native of Leachville, Arkansas and received his preliminary education from the Hendrix College at Conway. His M.D. degree was obtained from the University of Arkansas School of Medicine

in 1958. He interned at the St. Vincent Infirmary in Little Rock. Dr. Shaneyfelt's office is in Manila, Arkansas.

Dr. Wade Burnside is a new member of the Washington County Medical Society. He is a native of Natchez, Mississippi, and received his preliminary education from the Kemper Military School in Boonville, Missouri. His M.D. degree was obtained from the Tulane University Medical School located at New Orleans, Louisiana. He is a specialist in pediatrics and has opened his office at 1749 N. College Avenue, in Fayetteville.

Dr. Grady E. Hill, Jr., is a new member of the Union County Medical Society. A native of Calhoun City, Mississippi, Dr. Hill received a B.S. degree from the Mississippi State College in 1949, and an M.D. degree from the Tulane University School of Medicine in New Orleans, Louisiana in 1955. He is a general practitioner with his office at 430 South West Avenue, El Dorado, Arkansas.

Dr. L. G. Fincher, Jr., a member of the Union County Medical Society, has just completed residency in Obstetrics and Gynecology at Memphis, Tennessee and has opened his office at 328 West Oak, El Dorado, Arkansas.

A new member of the Jefferson County Medical Society is **Milton Robert Wirthlin**. Dr. Wirthlin is a native of Minturn, Arkansas. His preliminary education was obtained in Arkansas and in 1929 he was graduated from the University of Arkansas School of Medicine. He has just completed 30 years of active duty in the Medical Corps, U. S. Navy. Dr. Wirthlin is the Medical Director for the Jefferson County Health Department with his office at 405 West Second Street, Pine Bluff, Arkansas.

Dr. Arlee E. Pollard has been accepted for membership in the Jefferson County Medical Society. He is a native of Union Hill, Arkansas and received his preliminary education at the Arkansas Teacher's College and the University of Arkansas

from which he obtained a B.S.A. degree in 1950. His M.D. degree was obtained at the University of Arkansas School of Medicine in 1956. He served his internship and residency in anesthesiology at the University of Arkansas Medical Center. He holds the position of Senior Resident in Anesthesiology at the University of Arkansas Medical Center and anesthesiologist for the 148th Evacuation Hospital, National Guard in North Little Rock. His address is 1805 W. 33rd, Pine Bluff, Arkansas.

Contributors to the American Medical Education Foundation from the State of Arkansas, February 1960:

C. L. Harris, Hope	\$15.00
D. H. Lowrey, Russellville	15.00
J. H. McCurry, Cash	25.00
	<hr/>
	\$55.00

Woman's Auxiliary

The new officers of the Woman's Auxiliary to the Jefferson County Medical Society are Mrs. J. Richard Pierce, Jr., president; Mrs. D. J. McCaughey, vice president; Mrs. V. Bryan Perry, treasurer; Mrs. B. H. Cheek, president-elect; Mrs. W. T. Lowe, historian; Mrs. Jim Campbell, secretary, and Mrs. James T. Rhyne, parliamentarian.

The Woman's Auxiliary to the Boone County Medical Society sponsored the annual Doctor's Day dinner on March 30. Mrs. William H. Breit, president, presided. Dr. Ben Saltzman of Mountain Home spoke on the Hospital for Crippled Adults at Memphis, which is sponsored by the Rotary Clubs. Other out-of-town guests besides Dr. and Mrs. Saltzman were Dr. and Mrs. Lawrence Kelley of Yellville, Dr. and Mrs. Oliver Wallace of Green Forest, and Dr. and Mrs. Wayne P. Jones of Berryville.

A "Gay Nineties" dinner party on Doctor's Day was sponsored by the Auxiliary

of the Independence County Medical Society, with doctors and their wives dressed in the fashion of the Nineties. The dining table was lighted with antique kerosene-burning lamps, and an old-fashioned dinner of fried chicken and baked apples was served family style. Dr. J. J. Monfort gave a report on his recent trip to Washington and Philadelphia. Mrs. Paul Gray gave the history of Doctor's Day. After dinner the guests inspected old and interesting medical items such as instruments, saddle bags, books and medicine kits. A prize for the best dressed couple was awarded to Dr. and Mrs. Chaney Taylor.

The Woman's Auxiliary to the Arkansas Medical Society held its annual convention in the Hotel Pines, Pine Bluff, April 17-20 in conjunction with the 84th yearly meeting of members of the medical profession throughout Arkansas.

Book Reviews

VIRUS VIRULENCE AND PATHOGENICITY. Editors for the Ciba Foundation G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P. and Cecilia M. O'Connor, B. Sc., pp. 114, illustrated, published by Little, Brown and Company, Boston, 1960.

This is a very interesting brief book which has been written currently about virus diseases. Some of the material covered in this book has been reviewed also in a recent issue of the New England Journal of Medicine. All practitioners are interested in virus diseases and, although this book on virulence and pathogenicity is highly limited in its scope, it is easy to read and most informative. The discussions are excellent. This book is recommended to internists and research workers in the field of virus diseases. AK

A MANUAL OF TROPICAL MEDICINE, by George W. Hunter, III, Ph.D., Col. U.S.A., (Ret.) Lecturer in Microbiology, College of Medicine and Biological Sciences, University College, University of Florida, Gainesville, Florida. Formerly Chief, Section of Parasitology—Entomology, Fourth Army Area Medical Laboratory, Fort Sam Houston, Texas; Professor of Parasitology, Affiliated Units of the Graduate School, Baylor University. Chief, Department of Medical Zoology, 406th Medical General Laboratory, Tokyo, Japan. William W. Frye, Ph.D., M.D., Sc.D. (Hon.), Professor of Tropical Medicine,

Dean, School of Medicine, and Vice-President, Louisiana State University, New Orleans, Senior Visiting Physician, Charity Hospital of Louisiana. Member, Commission on Enteric Infections, Armed Forces Epidemiological Board. Formerly, Chairman, Parasitology and Tropical Medicine Study Section, U.S. Public Health Service. J. Clyde Swartzwelder, Ph.D., Professor of Medical Parasitology, Louisiana State University, School of Medicine, New Orleans, Louisiana. Consultant in Parasitology, Veterans Administration Hospital, New Orleans. Visiting Scientist, Charity Hospital of Louisiana. Formerly, Chief (Major, AUS), Field Survey Branch, Tropical Disease Control Division, Office of the Surgeon General, U.S. Army. Third Edition, Illustrated, pp. 892, published by W. B. Saunders Company, Philadelphia and London, 1960.

In the United States tropical medicine is taught as a matter of providing a complete medical education. One seldom encounters the more exotic diseases in clinical practice and yet with modern methods of transportation one can never be entirely certain that the patient who is seen today may not have been infected half a world away yesterday. Included in this book is a discussion of parasites and many of these are endemic in the United States. Specifically, this book is well written and quite well illustrated. The various authors participating are outstanding in their field. This book is heartily recommended to all practitioners. AK

CLINICAL MANAGEMENT OF BEHAVIOR DISORDERS IN CHILDREN, by Harry Bakwin, M.D., Professor of Clinical Pediatrics, New York University, Visiting Physician, Bellevue Hospital, Attending Pediatrician, University Hospital, and Ruth Morris Bakwin, M.D., Associate Professor of Clinical Pediatrics, New York University, Visiting Physician, Bellevue Hospital, Director Emeritus, Department of Pediatrics, New York Infirmary, Second Edition, Illustrated, pp. 597, published by W. B. Saunders Company, Philadelphia and London, 1960.

The study of behavior problems in children is a complex, interesting subject. This text discusses some of the problems physicians may encounter in disturbed children, children with less than normal intelligence, superior children and in average children who manifest certain aspects of abnormal behavior. Perhaps one of the most important portions of the book is that on problems related to emotional development. There is some discussion of the superior child. There is a short chapter on accident proneness; this is probably not given enough space in proportion to its importance in modern society. This book is recommended to pediatricians and those interested in child psychology. AK

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

MANAGEMENT OF PREGNANCY COMPLICATED BY TUBERCULOSIS

GEORGE SCHAEFER, M.D., GP, *October, 1959.*

The general practitioner should be alert to the possibility that tuberculosis may be present in a pregnant patient. Good results for both mother and child may be anticipated if there is careful prenatal and postnatal care and adequate treatment of the tuberculosis whenever it is active.

Current therapy for tuberculosis has led to treatment of fewer patients in tuberculosis hospitals and more as "outpatients" or on "home care." Thus, the management of the tuberculous patient, which previously was almost exclusively the domain of the phthisiologist, has now in part become the responsibility of the general practitioner.

The magnitude of the problem of pregnancy and tuberculosis is attested by the following statistics. Although tuberculosis has declined as a cause of death, one case is reported every six minutes. Tuberculosis is the leading cause of death from infectious diseases. Furthermore, of the approximately four million births a year in the United States, at least 40,000 occur in women with tuberculosis. The general practitioner should take an active part in the management of the pregnant patient with tuberculosis, just as he does in the patient with diabetes or heart disease.

INCIDENCE

The reported incidence of tuberculosis complicating pregnancy depends in large part on the efforts made to diagnose it. At The New York Lying-In Hospital from 1933 to 1945, incidence ranged from 0.4 to 0.7 per cent. With the establishment of routine chest X-rays of all antepartum patients in June, 1945, the incidence rose to 1.5 to 2.0 per cent. Objection has recently been raised to the carrying out of routine diagnostic chest X-rays. The question may be asked: Are the dangers of omitting a chest X-ray in this woman greater than the

risks of taking it? If the patient gives a positive reaction to tuberculin, the answer is yes. However, until the tuberculin test becomes routine for all antepartum patients in each pregnancy, routine chest X-rays with proper precautions should be performed.

DIAGNOSIS OF TUBERCULOSIS

The degree to which the general practitioner considers tuberculosis as a possible cause of symptoms largely determines how quickly the disease is diagnosed. Since pulmonary tuberculosis is minimal in its early stages, progression and advanced disease may be avoided by early, adequate treatment. Not infrequently the pregnant patient complains of tiredness, fatigue, vague chest pains — symptoms that may occur in pregnancy but which are also present in tuberculosis. The tendency to ascribe these symptoms to the pregnancy without further investigation may be disastrous to the patient.

MEDICAL TREATMENT OF PULMONARY TUBERCULOSIS

The practitioner may be called upon to treat two types of pregnant patients with tuberculosis. The first is the patient known to have tuberculosis before the onset of pregnancy. The second is the patient in whom tuberculosis is first discovered during pregnancy. In either type the disease may be active or inactive. The patient known to have had tuberculosis before conception — tuberculosis that is inactive during gestation — does not require additional medical treatment. The patient known to have active disease at conception is continued on the same course of therapy as if she were not pregnant. This includes modified bed rest, either at home or in the hospital, and antimicrobial drugs. Our present preference is for isoniazid plus either streptomycin or PAS. Antimicrobial therapy is continued throughout the entire pregnancy and for at least six months postpartum.

The majority of patients whose tuberculosis is first discovered during pregnancy will be found to have inactive disease. These patients are managed in the same manner as those known to have inactive tuberculosis before the onset of pregnancy.

Active tuberculosis will be discovered in

some patients during pregnancy. We advise that these patients be hospitalized. If the disease is minimal, isoniazid and streptomycin or PAS may be employed. Some advise isoniazid alone in this type of case.

The duration of hospitalization depends on several factors including response to chemotherapy and conversion of the sputum as well as on clinical and radiographic evidence of improvement. Other factors such as conditions at home, the presence of small children and the education of the patient in TB control, may determine whether to continue hospitalization until after delivery. Bed rest is no longer considered adequate therapy for tuberculosis. Furthermore, modified rather than complete bed rest is now advocated, and this is combined with specific drug therapy.

Antimicrobial drugs are used in all patients with active tuberculosis. The regimens and doses have been fairly well established. Treatment should be long-term and continuous, and to insure this the family physician must play an active role.

OBSTETRIC MANAGEMENT

In addition to medical treatment for the tuberculosis, the patient should have daily periods of rest. The diet should be supplemented with iron preparations and vitamins.

If the pregnancy and labor are to cause any progression of pulmonary tuberculosis, usually such changes will occur within three months of delivery. The results for our pregnant patients with tuberculosis compare favorably with a similar nonpregnant group of patients with tuberculosis.

Infants born of tuberculous mothers are normal in every respect. BCG vaccination is advised within the first 48 hours after birth for all these infants. Since BCG vaccination does not afford protection for six to eight weeks, the physician must be certain that no individual with infectious tuberculosis is at home when the infant is discharged from the hospital.

Following delivery the patient with inactive tuberculosis is ambulated slowly and kept in the hospital for approximately ten days. Women with active tuberculosis are transferred to a medical ward or to a tuberculosis hospital for further therapy. We do not permit tuberculous patients to

FEATURES

breast feed their infants. Exacerbations of pulmonary tuberculosis may occur, because tuberculous mothers undertake household duties and the total care of the infant too quickly after returning home. Before assuming full activity, a sputum or gastric analysis should be repeated and an

examination of the post-partum chest X-ray should reveal no evidence of activity.

Clinical observation and statistical analyses have convinced us that therapeutic abortion does not improve the prognosis of the pregnant patient who has tuberculosis.

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Radiation Treatment of Carcinoma of the Breast

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Radiation treatment of carcinoma of the breast is based on the concept that radiation properly given will destroy the malignant cells or will delay their growth so as to produce cures or prolonged palliation. Most agree that the primary treatment of carcinoma is surgical removal. In this country radical mastectomy is considered the method of choice, while in Scotland McWhirter (1) advocates simple mastectomy followed by radiation. The end results of the two procedures favor the Scottish plan of treatment even though post-operative treatment has been added to the surgical management in some cases in this country. Why, then, this discrepancy in results?

In an attempt to determine the underlying cause, we have made a study of 100 consecutive failures in our series of cases to determine the cause of our failures and thereby outline a method of treatment which would give us comparable if not better results than those obtained in Scotland. A review of our findings in the 100 cases should enable us to outline post-operative radiation treatment similar to that used by McWhirter and thereby improve our methods and results.

In a historical review of cancer of the breast before x-ray was invented the statistical results favored radical mastectomy over simple mastectomy. (Table I) The combination of radical surgery and radiation treatment as we have advocated it has not remarkably improved the results as compared with those of the last century as will be seen from the table. In reviewing these earlier results, it would

appear that radical surgery should be the preferred method. If so, how can we improve on the Scottish results? Two questions must be asked: (1) Why does not radical surgery give added protection over simple mastectomy? and (2) Is McWhirter controlling the disease by irradiation?

Since our discussion today centers on the radiation treatment of carcinoma of the breast, we will not discuss the surgical management other than to remark on the radiological aspects. It is safer as far as complications are concerned to give radiation treatment following simple mastectomy than after the radical procedure because the resultant blood supply is better and affords protection to the ribs and skin.

Surgery would suffice if cancer of the breast were a simple, localized disease. Since it is not, we must study the various methods of spread of the disease so as to know better how to treat these patients. Is the disease spread primarily by the blood stream or the lymphatics? If the disease is primarily spread by the blood stream, then it would be impossible to attempt prolonged control of the disease by radiation therapy or surgery. However, if the disease is primarily spread through the lymphatics, then the most frequent route of spread would be important, and the destruction of the disease in the areas most likely to be affected would be our goal.

In 1903 Schmidt (2) made a study of the lungs of 41 cases of carcinoma at Postmortem, and in 15 of the 41 cases he showed cancerous embolism of the small pulmonary vessels. In all these cases the

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OPERATIVE RESULTS

	NUMBER OF CASES	PERCENTAGE RECURRENCE	AVERAGE TIME OF RECURRENCE	AVERAGE SURVIVAL AFTER OPERATION FOR RECURRENT CASES
BREAST AMPUTATION ONLY 1858 - 1875	200	54.5%	22.0 MONTHS	34 MONTHS
BREAST AMPUTATION AXILLARY GLAND REMOVAL 1875 - 1895	230	39.0%	10.5 MONTHS	29 MONTHS
BREAST AMPUTATION AXILLARY GLAND REMOVAL CHEST WALL DISSECTION 1894 — OPERATIVE MORTALITY - 1.5%	275	13.8%	9.9 MONTHS	26 MONTHS

Table 1

ACCORDING TO:
CAMPICHE AND LAZARUS-BARLOW

primary growth was situated in the abdomen; thus the lung fields would be the most likely secondary site. Handley (3) quotes the following statement from Schmidt's general conclusions of his study in these 15 cases:

"In carcinoma of abdominal organs cancerous embolism of the small arteries of the lungs occurs with unlooked-for frequency and often repeatedly. Only a small proportion of these emboli give rise to metastatic tumors, or break through the arterial wall into the perivascular lymphatics. Most of them are either destroyed by organization of their ensheathing thrombus, or while retaining the power of growth are encapsulated and rendered harmless. They may, however, push forward through the organizing thrombus which surrounds them into the capillaries and small pulmonary veins, and may so give rise to growths in the course of the systemic circulation. All this may happen while to the naked eye the lung remains unaltered."

Following Schmidt's work on tumors of the abdomen and their embolic spread to the lungs Handley wrote "Cancerous embolism of the lungs has not been demonstrated in breast cancer, though probably it sometimes occurs." Therefore, to es-

tablish the embolic theory it is necessary to show that this blood invasion is effective. A review of 100 consecutive failures should demonstrate the embolic nature of the disease. If so, pulmonary embolic phenomena would be the first evidence of spread. This was not the case in our series. (Figure 1)

Our study shows that most of the secondary lesions seen in carcinoma of the breast are the result of lymphatic invasion and spread. Metastatic or persistent involvement was most frequently seen in the scar. The frequency of disease occurring in the scar region leads to the question as to whether the recurrence is a result of cells left in the tissues at the time of surgery or is a result of the disease permeating from the deep fascial (pectoral) lymphatic plexus.

It is apparent from Figure 1 that over 50 per cent of the recurrences appeared in the adjacent lymphatics, and if one considers pleural involvement as indicative of lymphatic invasion through the deep pectoral lymphatic plexus, the figure is 60 per cent or more. Liver disease secondary to breast cancer probably results from spread through the portal lymphatics. In reviewing Figure 1 one is

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SITE OF INITIAL RECURRENCE
100 CONSECUTIVE CASES

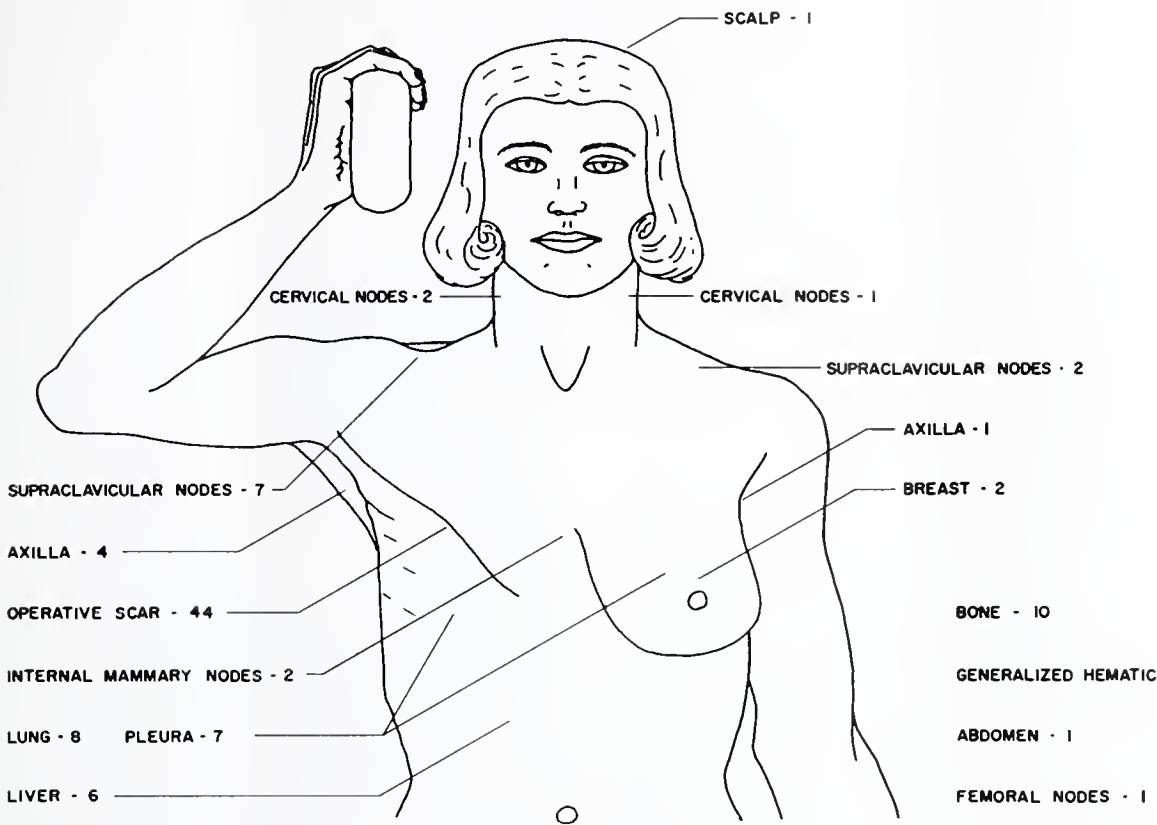


Figure 1

struck with the frequency with which the first recurrence is noted in the lymphatics and the infrequency, therefore, of hematic spread. We have chosen those cases showing bone involvement as being the only result of hematic spread, but we are not necessarily certain that this represents blood-borne disease. If the disease primarily recurs locally, then one would expect that distant metastases following the first recurrence would be slow in appearing, and this was the situation in many of our cases, as persistence or recurrence appeared in the scar two or three years before other spread was noted. The period of time after which scar recurrence was first noted in these cases varied from three months to eight years. Many of the scar and nodal recurrences (approximately 50 per cent) were noted in the first year. A review of x-ray treatment in this series reveals that most cases did not have x-ray treatment to the scar post-operatively, and those who did, did not have sufficient radiation to control the disease locally, assuming McWhirter

and Cohn (4) are correct in the amount of radiation necessary to destroy the disease in the area treated.

Before considering the proper approach to the radiation treatment, the five-year survival rates of all cases at our Institute between 1942 and 1951 are shown in Table II. These agree closely with the re-

TABLE II
Initial Los Angeles Tumor Cases
1942-1951

	Number Alive + Dead	Number Alive	Survival Rate
All Cases	545	280	51%
Localized	111	74	67%
Regional Spread	266	118	44%
Distant Metastasis	67	28	42%
Stage Not Recorded	101	60	59%

port on breast cancer in Connecticut from 1935 to 1953 in which Ryan (5) reported a study of 8,396 proved cases. He and his co-workers advise radical surgery followed by radiation as giving the best results, but do not outline a method of radiation treatment.

The initial sites of recurrence shown in Figure 1 do not necessarily represent surgery done in our institution, but the cases were treated by radiation or by surgery, or by both. In the 100 cases showing the spread of the disease in Figure 1, only 20 per cent of the cases were treated by surgery at our Institute. Therefore, this report is based on the work of a large group of surgeons who referred their cases to us for radiation therapy. It will be noted that 50 per cent of the cases showed a good five-year survival result, and the other 50 per cent were uncontrolled. We are interested mainly in this latter group.

RADIATION THERAPY

Improvement in results due to added post-operative radiation therapy depends upon several factors, all of which may be as important as the surgical technique.

1. The quality of radiation. The cancer cell can be destroyed by radiation of any quality, but our objective is to destroy the cancer cell without undue injury to normal surrounding tissues. Megavoltage radiation of gamma quality can reduce the damage to normal structures because its side scatter is less than that for conventional radiation. We use a two-million-volt Van de Graaff x-ray machine which has a fine focal spot, less than 8 mm. in size. This gives a sharp beam, in contrast to Cobalt 60, and therefore can be used tangentially without deleterious penumbra effect. This machine has the additional advantage of allowing us to use a portal of sufficient size to include all of the necessary tissue to be irradiated. By using a single anterior and posterior port, overlapping and "hot spots" are avoided.

2. The time-dose relationship. A sufficient rate of delivering radiation is necessary to destroy cancer. If the rate of irradiation is too high, necrosis results; if too low, no destruction of cancer is produced. By trial and error the radiologists have arrived at some conclusions regarding the dosage necessary. In the late 1920's and early 1930's 2000 r delivered in ten treatments was considered sufficient. However, with this dosage schedule, the cancers regrew. With the advent of shock-proof apparatus in the middle 1930's, the dosage was increased but

the quality of the radiation remained about the same. It was found that 3000 r in ten to fourteen days was still insufficient, and the development of severe tissue reactions caused radiation to fall into disfavor.

With the advent of 2 MeV radiation we have been able to deliver 6000 r in 35 treatments or 42 days. In only one case have we had a recurrence in the area treated. In only one case have we had severe tissue damage, and this in one of the first four cases treated. We plan to continue this schedule of radiation.

3. Portal technique. We have been mistaken in our past opinion that we should not treat the operative field. After this review we have changed our opinion and are now treating the scar and axilla as well as the internal mammary nodes and supraclavicular region, where previously we treated the internal mammary, mediastinal and both supraclavicular regions. (Figures 2 and 3) We still consider it important to treat the mediastinal nodes and the opposite supraclavicular region, but it is not feasible to include this much normal tissue unless disease is known to be present. The portal technique used resembles McWhirter's very closely. He is delivering 3700 r HVL 3.5 Cu in 21 treatment days to those who have had simple mastectomy. We are delivering 6000 r HVL 12:5 Cu in 35 treatment days at a tumor dose rate of 170 r daily.

The number of treatments necessary to complete our radiation therapy in post-operative cases is longer than that used by most therapists, and of course is an economic problem for many patients. It has one great advantage — complications of radiation are kept to a minimum. However, Cohn, McWhirter, and Friedman (6), all excellent therapists, have good results without extending their therapy over this period of time.

Several years ago we (7) reported on the value of sector scan technique whereby we were capable of treating the entire scar region, internal mammary nodes, supra- and infraclavicular nodes and axilla in one port, and at the completion of the scan the beam stopped momentarily to treat the mediastinal nodes. During 1952 and 1953 thirteen such Stage III

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RADIATION PORTALS

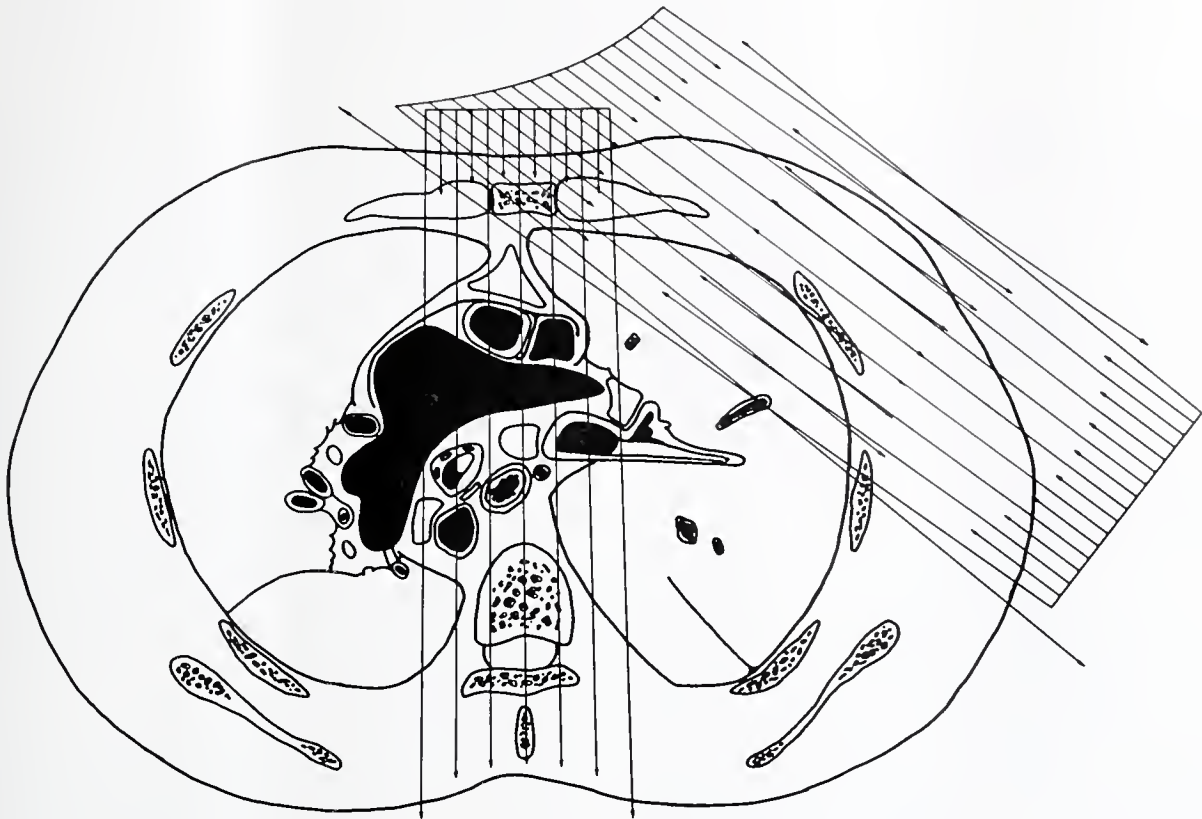


Figure 2

cases were treated, and six remain alive and well five years after treatment.

SUMMARY

A review of the present approach to the radiation treatment of cancer of the breast is presented. The large number of recurrences in the region of the surgical scar and adjacent lymphatics has influenced us to include the scar and axilla in

the radiation port. We previously had not done so. Our approach to the post-operative treatment is similar to the method proposed by McWhirter, except that the treatment is being delivered in a longer period of time using 2 MeV radiation therapy.

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CANCER OF THE BREAST

RADIATION PORTALS

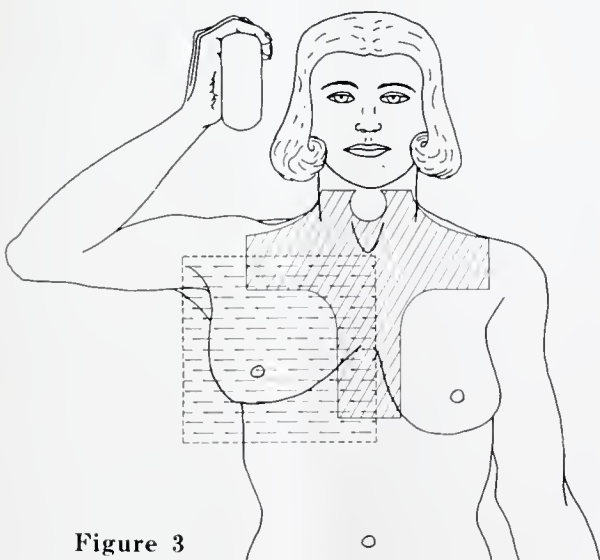


Figure 3

Medicine — The Universal Language

J. W. FULBRIGHT, SENATOR
CHAIRMAN, UNITED STATES COMMITTEE
ON FOREIGN RELATIONS

It is with some trepidation that I approach the invitation of the Arkansas Medical Journal to write an article about the ways in which medicine can promote American foreign policies. Medicine, after all, is a considerably more exact science than diplomacy, or, for that matter, politics. Yet I undertake this task on the assumption that the practice of medicine is fraught with some of the same frustrations that beset the practice of politics and diplomacy.

As medical men, you have on occasion, I am certain, exhausted all the resources of medical science available to you only to find the patient growing worse. Such setbacks are the lot of the best of physicians and the best of diplomats.

Diplomacy is perhaps even more unpredictable. It often happens that a troublesome diplomatic situation, which has not responded to the conventional initiatives and diplomatic devices, is radically transformed, for better or worse, by some unpredictable, chance occurrence.

I often think of the diplomatic success gained by the United States in Austria as a result of a single unselfish, but imaginative gesture in which the medical profession played a leading role. A little peasant boy in the Tyrol afflicted with hemophilia lost a tooth and was literally bleeding to death. The normal coagulants could not save him, and transfusions were barely keeping him alive. In Vienna, medical people were contacted. An American suggested, that only a serum made in Michigan would save him. The cry for help went out. An Air Force jet fighter flew the serum from Michigan to Westover Field, Massachusetts. From there, it was ferried to Munich. At this point, a raging blizzard made the rest of the trip extremely arduous and dangerous. Nevertheless, by plane and jeep, the serum got to Innsbruck at the eleventh hour, and the little boy was spared.

The effect of this achievement was spectacular. It excited the imagination and admiration of all Austria, indeed, of

Europe itself. Weighty distinctions between American and Soviet policies suddenly became less important than the instinctive humanity of the United States in throwing its mighty resources into a splendid effort to save one insignificant human creature.

Admittedly, this was an exceptional and a fortuitous event. Diplomatic victories normally arise out of the conventional and laborious diplomatic processes. However, the Austrian incident demonstrates, first, the enormous significance of medical science in today's world; second, that the medical profession has an urgent and broad role to play in America's constantly evolving diplomacy.

In all countries of the world, regardless of the race, creed, color or politics of the people, when you talk about the problems of the sick and disabled, you speak a common language.

In countries where life expectancy is half our own, where each year a third of the babies die during the first year of life, one of the greatest aids to American international relations is medicine. It is medicine which promises to these people freedom from constant suffering, greater productivity and longer life.

The need for our help is urgent. In India, for example, tuberculosis kills more than half a million people each year. Trachoma and infectious conjunctivitis are estimated to affect 400 million people — around the world, one-seventh of the total world population. Of these an estimated 10 million will become blind. In some sections of North Africa, where practically the entire adult population is suffering from these diseases, the rates among children of preschool age are sometimes 70 to 100 per cent. At least 250 million people throughout the world annually suffer attacks of malaria and each year around 2.5 million die of the disease. Although reliable statistics are rarely available in the newly developing nations, it is estimated that intestinal diseases, such as typhoid and the dysenteries,

cause illness to 60 percent of the people of Thailand. In Venezuela, the same illnesses cause 164.8 deaths annually per 100,000 population.

These are only a few examples of the diseases which continue to rage virtually unchecked and uninhibited in most areas of the globe.

Almost half the people in the world in undeveloped areas, which means over a billion human beings, have never had a physician to treat their ills. They spend their lives suffering from diseases which have been nearly eliminated in the West.

One of the best ways I know to carry the knowledge of the democratic way of life into underprivileged countries is to give medical help to these people. This is the type of help that they can translate and understand. It goes straight to the people. An Iranian mother whose child is saved in childbirth or an Indian whose sight is restored by a simple cataract operation, cannot misunderstand this demonstration of America's real concern for their betterment.

Many Americans have never thought of medicine as an instrument of foreign policy. On this subject, our instincts as a people are purely humanitarian. This is as it should be. But this generation of Americans is caught in a battle to win other nations, not just as political allies, but to help them in their attempt to put a higher value on human worth.

For many years now this country has found it necessary to spend large sums on military assistance. This aid has been criticised both at home and abroad. It is branded as being based only on our own national interest. There have been charges that American armaments have been used by dictators against their own people. Whether or not these criticisms are justified, we do know that medical aid is one type of assistance that cannot be misrepresented as flowing from selfish motives, nor can it be linked to unpopular political regimes. While military assistance may help to win a cold war, it is medical assistance which can go far to win the friendship of a cold world.

In the countries I have visited as a member and as Chairman of the Committee on Foreign Relations, I found no group doing more to win this friendship

than American medical men and women. There are few other United States representatives abroad who are regarded with so much respect and so little suspicion. The common people in these countries understand the language of medicine and the mission of the white-clad doctor and nurse with their packages of saving serum.

The medical aid program which appeals so much to the American spirit of generosity and compassion, has enlisted the energetic support of many forces in this country. Although only a start has been made, progress has been striking. Under the leadership of doctors, specific programs have been launched by individuals, foundations, private companies, universities, and the Government.

One of the most important individual contributions has come from Dr. Howard Rusk, Chairman of the Department of Physical Medicine at New York University Medical Center and Associate Editor of the New York Times. Dr. Rusk, who is now President of the World Rehabilitation Fund, has traveled in the interest of the rehabilitation of handicapped people to almost every country in the world. Testifying before the Senate Committee on Foreign Relations in 1956, Dr. Rusk told us that, "Rehabilitation of disabled children and adults is one of the sharpest tools and most effective instruments which we in the United States have for making friends — a tool which can penetrate any Iron or Bamboo Curtain to reach the minds and the hearts of men. It is natural for all of us to take improved agriculture, industry, and utilities for granted, but men often regard these developments as somewhat remote from their immediate problems. Rehabilitation, however, makes a personal and significant impact, not only upon the disabled person himself and his family, but on those with whom he comes in contact."

Other individual efforts which come quickly to mind are those of Dr. Gordon Seagraves in Burma and Dr. Tom Dooley in Laos, who have been giving their services on the most basic physician-to-patient level, treating people who otherwise would receive no attention.

Dr. Dooley was a Navy physician in

Viet-Nam in 1954 when he and four unskilled enlisted men volunteered for the job of giving medical care to half a million refugees streaming down from the North ahead of the Communists. This is what Dr. Dooley said he had learned from this experience: "We had seen simple, tender loving care — the crudest kind of medicine practiced by mere boys — change a people's fear and hatred into friendship and understanding. We had witnessed the power of medical aid to reach the hearts and souls of a nation. We had seen it translate the brotherhood of man into a reality plain people could understand."

A group of American physicians set to work to expand this type of individual contribution by founding a non-sectarian, non-governmental organization called Medical International Cooperation (MEDICO). With the exception of religious missionary medical organizations, there previously had been no existing international medical machinery to utilize the service and talents of private practicing physicians and surgeons in the United States. MEDICO, which is sustained by private funds, sends volunteer American physicians into various parts of the world to organize and maintain hospitals until they can be taken over by medical personnel of the particular country. It is planned that the hospitals will be centers for reaching out into the most remote regions. MEDICO is currently providing assistance in a dozen overseas areas from Cambodia to Peru, and from Laos to Kenya.

For many years the American Medical Association has played an active and far reaching role in the international health field. The Association helped to organize and support the World Medical Association in 1948 and an AMA representative has served with the United States delegation to the Assembly of the World Health Organization, a subsidiary of the United Nations. The journal of the AMA serves as an up-to-the-minute medical textbook for approximately 10,000 overseas subscribers and medical films are loaned by the Association to medical societies all over the world. The AMA has been vitally interested in the training, in American hospitals, of phy-

sicians educated abroad. In 1957-58 for instance, a total of 7,622 physicians from 90 countries were trained in American hospitals as interns or residents. At the present time that fellowship is being actively supported by American Medical Association funds.

Such exchange programs of medical personnel sponsored by private organizations or universities, state and municipal departments of health, are supplemented by the Federal Government.

Dr. Detlev Bronk, President of the Rockefeller Institute of Medical Research, stated recently that "one of the great contributions that the Federal Government has made to the furtherance of science in this country and in our sister nations has been by enabling, through small grants, young people to go to other countries and learn from their colleagues abroad and act, I think, as desirable ambassadors of the American Nation." This is precisely one of the results I hoped for when I proposed the Fulbright Act for exchange scholarships.

Next summer, a demothballed, former Navy hospital ship, the U.S.S. Consolation, will sail from San Francisco to Southeast Asia on a mission of medical teaching and training. The refitting and equipping of this ship was paid out of funds provided by the People-to-People Health Foundation, Inc., a private, non-profit corporation. The American Medical Association, American Pharmaceutical Association and private drug companies have made solid contributions to this project known as "Project Hope." In July 1959, a proposal was made in Congress for the Government to undertake a similar effort and enlarge and extend this imaginative plan.

On May 20, 1959, the Senate passed legislation known popularly as the health-for-peace bill. It proposes to create within the National Institutes of Health, a new National Institute of International Medical Research with an annual appropriation of \$50 million. These funds would be used to encourage and support research and the exchange of information on research, the training of research personnel, and the improvement of research facilities throughout the world.

The bill would authorize grants to support such activities ranging from research in basic science to research in rehabilitation. Grants could be made to foreign and American universities and research organizations and to voluntary and governmental international agencies such as the World Health Organization. Under the plan, a national advisory Council for international medical research composed of non-governmental leaders, would establish policies, make recommendations and approve grants and loans under the program.

In the field of international relations, this will not be a matter of government dealing with governments, but primarily a matter of doctors or scientists dealing with other doctors in an effort to better the health of mankind.

The United States Government contributes to world medical aid through international organizations such as the United Nations World Health Organization, the United Nations technical assistance program, and the United Nations Children's Fund. The first permanent international health agency arose in our own hemisphere — the Pan-American Sanitary Organization, now a regional office of the World Health Organization.

Another Government contribution is the health program of the International Cooperation Administration which has met with a quick response in the countries involved. Projects are specific and well-defined, involving a definite commitment financially from both the United States and the host country and are aimed at accomplishing a specific result. The broad range of projects include control of specific diseases, development of public health facilities, and training and education.

Malaria control is the best example of a specific disease campaign. Campaigns have been so successful that various countries are now considering complete eradication of the disease. Among these are Mexico, Taiwan, Iran, and the Philippines.

Another health problem to be attacked by concentrated campaigns is yaws, which is widely prevalent in tropical and subtropical countries. One injection of penicillin is frequently sufficient to cure an individual of the disease.

In helping to create effective public health programs, the ICA has placed emphasis on aiding the development of large numbers of small health centers where various preventive medicine activities can be carried on. These include child care and advice to mothers, tuberculosis examination and treatment, treatment of venereal disease, and immunization against communicable diseases.

An outstanding development of recent years in the United States technical cooperation programs has been the association of educational institutions of host countries with universities in the United States. The United States universities, under contracts financed by the ICA, work with the host country institutions in upgrading and expanding medical and health education. Harvard University, for example, is helping to develop courses in nutrition at various Latin American Institutions; the University of California is associated with the University of Indonesia in developing medical education; the University of Minnesota is helping the National University of Seoul in the Republic of Korea to strengthen programs in medicine and nursing.

At the present time, the Medical Department of the Navy operates a modern research laboratory in Cairo, Egypt, which has performed an outstanding service not only to American personnel, but to the health of the people of the Middle East through its research findings and through the teaching of personnel from many of the Arab countries. It has been, I believe, one of the most useful things that this country has done in that area, for all through the Arab League our doctors and technicians have traveled. It is a splendid example of what research can do.

Yet it is also a reminder of the scope of the problem of guiding the aspirations and the needs of the poorer peoples of the earth toward genuinely productive and progressive ends. The problem, as you doubtless know, is many sided and beset with contradictions. Thanks largely to medical science, the United States and other highly civilized nations are making — have made — a major impact on the dread diseases that for centuries have held many of the world's peoples in a

crude balance with their primitive agri- cultures. Now there is the problem of seeing to it that we in the West, by sparing countless millions from death by disease, are not condemning them instead to the slower death by starvation.

Tropical research stations, malaria control programs, "Health for Peace" Institutes — all these have succeeded in some areas in contributing to population growth, but at the expense of economic growth.

It occurs to me that one way out of this dilemma lies in some form of population control. If society, through its medical science, can intercede in the natural order by reducing death rates, then logically, society should seek to mitigate the onerous consequences of this alteration by influencing the birth rate. If we prevent, or impede, the general acceptance of this concept, we will, I think, be guaranteeing greater world poverty, with all of the inhumane and possible explosive consequences that this implies. Parenthetically, I should add that it is this urgent need to stimulate economic growth, and thus eliminate poverty, that gives com-

elling and primary importance to our economic aid programs. This is one reason why I have supported these programs, in the past.

Finally, it should be noted that in the space granted me here I have mentioned only a few of the medical assistance projects in which Americans are participating around the world. These programs, whether undertaken by individuals, foundations, missionary organizations, private companies, universities, or the Government, have been almost uniformly beneficial in achieving their immediate aims. But all of us — the public and the private sectors of our country — must work to do more. It is action in this field that can win for the United States more friends than can be gained by years of effort in other ways. Progress in medical aid demonstrates better than almost any other conceivable way, the interest and concern, not only of the United States Government, but of the American people for other human beings all over the world. This is aid from people-to-people. This is the universal language of medicine.

Recent Advances in Antimicrobial Therapy With Particular Reference to Staphylococcal Infections*

HARRIS D. RILEY, JR., M.D.

Antimicrobial agents represent in all probability the most useful and yet most misused of all therapeutic agents in medical practice. There is little doubt that the therapeutic triumphs with these agents have changed the entire practice of medicine. This has been most noticeable in the field of pediatrics but it has had an effect on every branch and facet. The effect of antimicrobial drugs on the shortening of illness, on the avoidance of serious complications, on the reduction of mortality and even in the prevention of illness constitute one of the greatest achievements in medical history.

It is become readily apparent that the rapid conquest of one disease process after another by antibiotic agents has slowed. It is also quite apparent that these agents are not without danger, and at the present time there is a great need for greater discrimination in selection of the patient to be treated, of the agents to be used and in the determination of the length of therapy.

To keep abreast of current developments in antimicrobial therapy the physician must be prepared for change. New antibiotics are being discovered each year. Perhaps even more important, the bacteria themselves are constantly changing in their sensitivity to those antibiotics which are in use. The human host, in turn, is constantly changing in sensitivity to the same bacteria, to newly developed flora and also to the antimicrobial agents themselves.

In 1956 about 2.5 million pounds of antibiotics were produced in this country. Penicillin for drug use accounted for 25 per cent of the total produced. In 1945 there was only one form of penicillin available. At the present time there are at least 121 different preparations of this

drug available to the physician. As of July, 1958, there were on the market 69 antibiotic agents which contained two, three, four, or five antibacterials in combination.

CLASSIFICATION OF ANTIBIOTICS

Antimicrobial drugs are classified as bacteriocidal (those which kill bacterial organisms) or bacteriostatic (those which primarily inhibit bacterial multiplication which however resumes upon removal of the bacteriostatic drug).

Group A— Bacteriocidal	Group B— Bacteriostatic
Penicillin	Tetracycline
Streptomycin	Chlortetracycline
Bacitracin	Oxytetracycline
Neomycin	Chloramphenicol
Polymyxin B	Erythromycin
	Sulfonamide drugs

Bacteriocidal agents actually differ from bacteriostatic agents only in the fact that their action is irreversible. The difference between bacteriostatic and bacteriocidal action appears to be quantitative rather than a qualitative one. Agents may be bacteriostatic at a given concentration and for a given exposure while increasing concentration or exposure may cause a progressive shift towards bacteriocidal action. Primarily bacteriocidal agents in common use are penicillin and streptomycin. Primarily bacteriostatic agents are tetracycline and related compounds, chloramphenicol, erythromycin and sulfonamides.

INDICATIONS AND PRINCIPLES OF THERAPY

Antibiotic and chemotherapeutic agents are indicated for 1. diseases in which a specific microbial etiologic agent has been identified by culture or serology. 2. for diseases in which the clinical picture implies a definite etiologic diagnosis and 3. as a possible life-saving measure in a desperately ill patient without exact or complete etiologic diagnosis.

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The fundamental principles of therapy in infectious diseases are:

1. Identification of pathogen
2. Selection of therapeutic agent(s) most active against pathogen
3. Administration of adequate amounts of drug to destroy pathogen

A reasonable guess as to the likely bacterial pathogen present is frequently possible on clinical grounds alone. This may be based on previous experience with a similar illness in the community and the previously proved bacteriologic diagnosis in similar instances. A specific bacteriologic diagnosis is of course helpful and should be obtained whenever possible.

In the management of an individual acutely ill with an infectious disease, for which antimicrobial therapy is deemed necessary, the administration of it should not be delayed until bacteriologic identification is completed, but appropriate material for culture and laboratory study should be obtained before therapy is instituted. The initial selection of antimicrobial agent or agents should be based on an educated guess to include action against the most likely pathogens. Such decisions are particularly important in serious infections as meningitis and septicemia and for infections in the newborn infant. When the laboratory data becomes available and response of the child to the initially prescribed antimicrobial agent or agents has been observed, the decision can be made in regard to continuation or change in the therapeutic program.

There are, however, situations where the failure to obtain a bacteriologic study is hazardous. There are primarily in the field of chronic bacterial infections and includes such conditions as chronic urinary tract infections, chronic purulent otitis media, bacterial endocarditis, meningitis and osteomyelitis.

ERRORS

Most of the errors in antimicrobial therapy can be grouped under three categories:

1. Unnecessary therapy.

We should remember that these drugs are antibiotics and not antipyretics. Most of them are costly and may cause disorders far more serious than those for which they are so widely and indiscriminantly

used. They are probably not indicated in the majority of instances in which they are prescribed. The obvious difficulties related to the management of the individual patient are (a) The immediate uncertainties as to whether the infection is sufficiently severe to require specific therapy and, if so, whether the infection is apt to be caused by an organism susceptible to any of the available antimicrobial agents. (b) The feeling of the doctor that he must appear to be doing something for his patient. (c) The insistence of the patient or his family that something be done. Physicians caring for children have the opportunity to make an important contribution in the field of health education by providing the parent and often the patient with an adequate explanation of the illness whether medicinal therapy is or is not prescribed. The economic saving in the country as a whole would be incalculable if only necessary medication was prescribed. Most of the waste of antibiotics today is related to minor respiratory illnesses of non-bacterial etiology, unreasonable and mostly hypothetical prophylaxis, unnecessary combinations of antibiotics and excessive amount of drugs. It is well to remember that the drug chosen for the treatment of bacterial infection requires some time to become effective. The switching of antibiotics or the adding of other antibiotics within 24 hours because the patient does not become afebrile promptly usually leads to new problems. In general at least 48 hours and frequently 72 hours or longer after the drug has been started should be allowed to ascertain the response depending on the nature of the infection.

2. Use of the wrong agent.

A common example is the choice of penicillin for infections usually due to organisms which are insensitive to this agent.

3. Inadequate use of appropriate agent.

DANGERS OF ANTIBIOTIC THERAPY

These may be classified in the following manner (1):

1. Hypersensitivity
2. Direct drug toxicity (vomiting, diarrhea, pruritus of mucosa, etc.)
3. Alteration of normal microbial

flora with resulting superinfection by staphylococci, *Pseudomonas*, *Proteus* or *Monilia*.

4. Masking serious infections such as appendicitis and influenzal meningitis.

5. Increasing bacterial resistance.

The Food and Drug Administration (2) has attempted to gain some idea of the incidence of side reactions following antibiotic administration. A survey including each state and The District of Columbia was conducted. Twenty-nine per cent (198,322) of the 686,000 general beds were included. A total of 3,419 case histories of reactions were reported as severe by the physician or hospital involved. Of these 424 cases were eliminated mainly for lack of data for proper classification. Of the remaining 2,995 cases, 2,517 were associated with use of penicillin. Thus, penicillin was involved in 80 per cent of all reactions reviewed in this survey.

It is estimated that about 10 per cent of our population have a "proneness" to become sensitive during their lifetime to some food, drug, cosmetic, or other substance, while the great majority are relatively resistant. With the present population figures for this country of over 170 million, we are concerned with some 17 million who may react to penicillin or some other antibacterial agent.

There were 1,925 reactions which were not classified as life threatening, and in 1,616 of these penicillin was the responsible agent (84 per cent). These reactions were mainly cases of angioneurotic edema and other dermal lesions.

One thousand and seventy cases were classified in the survey as "severe" or life threatening and of these penicillin was involved in 901 (84 per cent). Of the 901 penicillin cases, 83 died, a fatality rate of about 9 per cent. The great majority of severe penicillin reactions were of the anaphylactoid shock type (793) with a fatality rate of 9 per cent. No deaths occurred in the anaphylactoid cases involving oral penicillin, while there were 63 deaths following intramuscular injection of this drug in 611 cases. Sixteen anaphylactoid reactions with two deaths were associated with other antibiotics. The incidence of anaphylactoid reactions increased during the three years fully cov-

ered in this survey: 179 cases in 1954, 231 in 1955, and 301 in 1956.

Of the 107 superinfections classified in the survey as life threatening, 99 were cases of enterocolitis in 74 of which Staphylococci were isolated. Eighty-five cases in this group were associated with oral administration of one or more of the tetracyclines. In the majority of cases (59) the enterocolitis followed abdominal surgery. The fatality rate was quite high in the enterocolitis group (about 40 per cent) which is in accordance with previous experiences with the serious type of reactions. Eight cases of severe moniliasis were reported — four intestinal, two dermal, and two pulmonary — with one fatality.

Of the 70 severe skin reactions, exfoliative dermatitis was most frequently encountered (51 cases). In addition, 16 cases of anaphylactoid purpura and three cases of erythema multiforme were reported. The overall fatality rate for the group was 10 per cent.

During the past few years there has been an increase in the use of chloramphenicol in the United States. That this use has been under careful supervision and selective appears to be substantiated by the few blood dyscrasias. Sixteen examples of blood dyscrasia associated with chloramphenicol were recorded. The data obtained regarding the age and sex of the patients developing a blood dyscrasia substantiate previous findings, namely, that white children under 12 years are most frequently affected. Furthermore, females are two or three times more frequently involved than males, and usually there is a history of prolonged or frequent illnesses including various allergic disorders.

Of the 1,396 cases of angioneurotic edema reported only 38 had respiratory or cerebral involvement. These were classified as life threatening. Thirty-seven of these followed the administration of penicillin and one followed chloramphenicol. In this group occurred the only fatality from oral penicillin.

CLINICAL PROBLEMS OF ANTIMICROBIAL THERAPY

Staphylococcal infections perhaps illustrate all facets of the problem better than

RECENT ADVANCES IN ANTIMICROBIAL THERAPY

any other. Infections with this organism are rapidly assuming major importance in the practice of medicine in hospitals and may soon become a significant problem to the physician in community practice as well.

There has been a definite increase in the number of antibiotic-resistant staphylococcal strains in the past few years. Although the development of resistance to penicillin has been most striking, many strains have exhibited increasing resistance to other antimicrobial agents.

As a general rule as new antimicrobial agents are introduced for clinical use, staphylococci show a pattern of progressive increase in resistance to the new agent.

This is demonstrated in Table 1. In the period 1932-1948, largely before penicillin was available, only seven per cent of strains of staphylococci isolated at the Post-graduate Hospital in New York were resistant to this drug where as 72 per cent of the strains isolated at Bellevue Hospital in 1953-1954, after penicillin was in common use, demonstrated resistance to penicillin. None of the strains isolated in 1932-1948 were resistant to tetracycline whereas 66 per cent of strains recovered in 1953-1954 were resistant to this agent. The comparative picture with other agents is shown in Table 1 (4).

Spink et al (6) in Minneapolis found only twelve per cent of 68 strains of sta-

Table 1
SUSCEPTIBILITY OF STAPHYLOCOCCUS AUREUS TO ANTIBIOTICS*

1932-48 1953-54	Postgraduate Hospital Bellevue Hospital	55 Strains 516 Strains		
			SENS. PER CENT	INTERMED. PER CENT
Penicillin	Postgrad. Bell.		78 15	15 13
				7 72
Tetracyclines	Postgrad. Bell.		100 33	— 1
				— 66
Streptomycin	Postgrad. Bell.		4 1	92 33
				4 66
Erythromycin	Postgrad. Bell.		89 97	11 2
				— 1
Chloramphenicol	Postgrad. Bell.		2 5	94 86
				4 9

*From Knight & Holzer (4).

Table 2
ANTIMICROBIAL SUSCEPTIBILITY OF STAPHYLOCOCCI*

New York, 1953-54 - 516 strains
Nashville, 1955 - 647 strains

	Penicillin Per Cent		Tetracycline Per Cent		Streptomycin Per Cent		Chloramphenicol Per Cent		Erythromycin Per Cent	
	N.Y.	Nash.	N.Y.	Nash.	N.Y.	Nash.	N.Y.	Nash.	N.Y.	Nash.
Resist.	72	58	66	51	66	52	9	1	1	2
Intermed.	13	21	1	2	33	45	86	91	2	6
Suscep.	15	20	33	48	1	3	5	8	97	92

*From Knight (5).

phylococci which showed resistance to penicillin in 1945; however, in 1953 this had risen to 62.7 per cent (3).

The difference in susceptibility patterns of this organism to various antibiotic agents in different communities is shown in Table 2. Whereas 72 per cent of strains isolated in New York in 1953-1954 were resistant to penicillin, only 55 per cent of strains isolated in Nashville in 1955 were penicillin resistant. A similar pattern for other agents tested with the exception of erythromycin was found (5).

The percentage of antibiotic-resistant strains of staphylococci by *in vitro* tests in Minneapolis is shown in Table 3 (3).

Table 3

Per Cent Resistant Strains of Staphylococci by In Vitro Test*			
	1951	1952	1953
	%	%	%
Penicillin	62.5	27.3	62.7
Streptomycin	48.0	48.8	65.3
Chloramphenicol	25.0	2.5	0.6
Oxytetracycline	38.0	47.5	62.7
Chlortetracycline	23.0	33.2	62.7
Erythromycin	-----	0	18.3
Bacitracin	0	0	0
Neomycin	0	4.2	0

*From Spink, (3)

Well over half of the strains isolated were resistant to penicillin and over the three year period there has been a progressive increase in resistance to erythromycin and tetracyclines. In contrast to this is the decrease in resistance to chloramphenicol between 1951 and 1953. This improvement in *in vitro* susceptibility coincides exactly with the restriction of the use of chloramphenicol in that particular hospital.

Lepper et al (7) have shown that whereas only approximately 41 per cent of patients entering the hospital harbor chlortetracycline-resistant staphylococci in their upper respiratory tract, this increases to 90 per cent on discharge following contact with hospital attendants, the vast majority of whom carry drug-resistant staphylococci.

NEW AGENTS

Because of the development of resistance by many strains of staphylococci,

much effort has been directed toward the development of new antibiotics useful in the treatment of such infections and for use in patients in whom penicillin and other antibacterial agents cannot be administered because of drug sensitivity. Some of the newer agents are shown in Table 4. The relative efficacy of the drugs in

Table 4
Treatment of Staphylococcal Infections

Penicillin	+
Tetracyclines	++
Chloramphenicol	+++
Erythromycin	+++
Novobiocin	+++
Bacitracin	++++
Ristocetin	++++
Kanamycin	++++
Vancomycin	++++

staphylococcal infections increases from 1+ to 4+.

ERYTHROMYCIN (ILOTYCIN, ERYTHROCIN)

The spectrum of erythromycin *in vitro* is similar to but wider than that of penicillin although not as broad as that of the tetracyclines or chloramphenicol. In general it is ineffective against the gram negative bacilli and exerts its effect only against multiplying bacteria. It is primarily bacteriostatic but may be bacteriocidal when highly sensitive organisms are exposed to high concentrations. Naturally resistant variants among erythromycin sensitive strains are rare. There is no cross resistance to other available antibiotics except other drugs in the erythromycin family such as carbomycin and spiramycin to which there is almost complete cross resistance. Resistance may develop during erythromycin therapy of acute overwhelming staphylococcal septicemia. Staphylococci developed significant resistance *in vivo* to erythromycin in ten days when three grams per day were given intravenously and two grams orally (8). Just how frequently this occurs is not known. In the treatment of the individual patient acquired resistance is unlikely to be a problem unless the infection persists in the presence of therapy for a period of over a week. In overwhelming infections it may develop more rapidly. Resistance may be markedly delayed by the simultaneous administration of an-

other antibiotic to which the organism is also sensitive. It is synergistic with sulfadiazine. There is no evidence that antibiotic antagonism is a problem in the clinical use of erythromycin.

GENERAL INDICATIONS FOR USE

1. Penicillin-resistant, erythromycin-sensitive gram-positive organism, particularly infections due to staphylococci and nonhemolytic streptococci.
2. Infections ordinarily treated with penicillin but contraindicated because of drug hypersensitivity such as hemolytic streptococcal infections.
3. An oral form of therapy for diseases usually treated with penicillin such as pneumococcal pneumonia.
4. Indicated for its antibacterial effect in diphtheria.

There is some evidence that it is an effective prophylactic agent in rheumatic fever. It also enjoys considerable success when employed as a substitute for penicillin in the treatment of staphylococcal endocarditis, however, it should be combined with a known bacteriocidal agent such as streptomycin in such situations.

A new derivative, the propionate ester of erythromycin, appears to have the property of producing much higher plasma concentration without increasing dosage increments.

Route	DOSAGE
	Most Infections (mgm/lb./24 hours)
oral	15 to 30 in 4 divided doses
intravenous	16 in 2 divided doses

In more severe infections larger doses may be necessary.

Toxic reactions, especially skin eruptions, to erythromycin are relatively uncommon.

OTHER RELATED ANTIBIOTICS

Carbomycin (Magnamycin), spiramycin, and PA 105 are antibiotics which are closely similar to erythromycin. As a general rule organisms resistant to erythromycin are usually also resistant to these drugs, especially carbomycin, and treatment failures are more common than with erythromycin.

OLEANDOMYCIN

While there is not an absolute correlation between the minimal inhibitory con-

centration of erythromycin and oleandomycin for all strains, particularly the staphylococcus, there is sufficient similarity of action that the use of one drug will frequently lead to the appearance of strains resistant to the other.

On the other hand, among the sensitive strains erythromycin is several times more effective on a weight basis than oleandomycin or triacetyloleandomycin.

NOVOBIOCIN (ALBAMYCIN, CATHOMYCIN)

Clinical and laboratory studies indicate that novobiocin is effective in the treatment of infections due to gram positive bacteria. It is most useful against strains of staphylococci resistant to other antibiotics. In general there is a lack of cross resistance of novobiocin with other antibiotics. With the more wide-spread use of this agent an appreciable incidence of allergic manifestations have occurred. Most noteworthy reactions have been extensive skin eruptions manifested by urticaria, generalized erythema, and maculopapular rashes; on occasion serum sickness has been noted and at least one case of acute hepatic necrosis following novobiocin therapy has been reported. In all probability resistant strains will appear with more widespread use of the drug.

	DOSE
oral—	10-20 mgm/lb/24 hours in 4 divided doses.
intramuscular—	8-15 mgm/lb/24 hours in 2 doses.
intravenous—	8-15 mgm/lb/24 hours in 2 doses.

KANAMYCIN (KANTREX)

Kanamycin is a relatively new and promising antibiotic agent. The action is primarily bacteriocidal with activity against a wide range of pathogens including both gram-positive and gram-negative organisms. It has proved to be highly effective against pathogenic staphylococci, many strains of which were resistant to other antibiotics in common therapeutic use. Resistance to kanamycin is acquired slowly by staphylococci but rapidly by the tubercle bacillus. Other bacterial species isolated from clinical sources that have proved susceptible to kanamycin in significant percentage include Salmonella, Shigella, E. coli and coliform organisms, and a few strains of streptococci (9).

Table 5

Kanamycin in Micrococcic Infections

Case	No. of Patients	Age	Dose mgm/kg/day	Duration of Treatment (days)	Comment and Response
Pneumonia	9				
1		2 wks.*	35	5	Satisfactory response
2		9 mos.	15	7	Satisfactory response
3		1 mo.*	20	6	Satisfactory response
4		1½ yrs.	60	5	Satisfactory response
5		6 wks.	20	42	Unsatisfactory Cultures became sterile but R. G. findings and clinical manifestations persisted.
6		3½ yrs.	15	14	Satisfactory
7		5 yrs.	20	18	Satisfactory
8		4 mos.	65	23	Satisfactory clinical response, but R. G. findings persisted.
9		7 yrs.	25 12.5	7 8	Satisfactory
Emphyema	3				
1		9 yrs.	25	7	Satisfactory response
2		20 mos.	50	7	Satisfactory response
3		6 wks.	20	42	Unsatisfactory. Cultures be- came sterile but R. G. find- ings and clinical manifesta- tions persisted.
Septicemia	5				
1		7 mos.	75	2	Pt. expired 48 hrs. after treat- ment started
2		3 days	15	7	Satisfactory response
3		5½ yrs.	30	9	Satisfactory
4		6 yrs.	20	73	Satisfactory
5		7.3 yrs.	32	12	Unsatisfactory
Gastroenteritis	1				
1		4 yrs.	40	5	Satisfactory response
Pyoderma with Abscess Formation	6				
1		4 days	15	5	Satisfactory response
2		2 yrs.	20	5	Satisfactory response Culture also revealed beta hem. streptococcus which persisted.
3		5 wks.	16	7	Satisfactory response
4		12 days	15	9	Satisfactory response
5		3½ mos.	15	10	Satisfactory response
6		2 wks.	15	8	Satisfactory response
Arthritis, septic	2				
1		5 wks.*	20	17	Satisfactory response
2		1 mo.	40	21	Satisfactory response
Osteomyelitis	3				
1		9 mos.*	50	20	Satisfactory response
2		12 days	20	7	Satisfactory response
3		6 yrs.	20	73	Satisfactory response

*Also had septicemia

Kanamycin should be given intramuscularly. However, when used in preoperative sterilization of the bowel or in the management of salmonella carriers, it may be given orally. The oral preparation is different from that used for parenteral injection.

The dose of kanamycin varies considerably. Using 20 mg./kg./day divided into two or three doses satisfactory serum concentrations in infants and children are obtained. Dosages range from 10 to 50 mg./kg./day and some investigators have used doses as high as 100 mg./kg./day in very severe infections.

Prolonged administration of kanamycin at high dosage levels may result in nephrotoxicity, eosinophilia, and damage to the vestibular portion of the eighth nerve. Prolonged treatment with intramuscular kanamycin may result in the appearance of granular casts and a few leukocytes in the urine, elevated non-protein nitrogen in the blood, and signs of impaired renal function. However, in our experience all of these changes are reversible on discontinuing the drug and we have noted no evidence of hearing impairment attributable to the drug (10).

We have had a fairly extensive experience with this drug in pediatric infections. Some of our results in staphylococcal infection are shown in Table 5 (9). The majority of these 29 infants and children had serious staphylococcal disease. A wide dosage range and duration of therapy was employed. In general the results were excellent and there were no serious or lasting side effects from the drug. We also obtained good results in infections other than those due to the staphylococcus. It has proved to be a very useful drug in the treatment of bacillary dysentery, enteric infections due to certain strains of *Salmonellae* and in pyelonephritis due to *A. aerogenes* and *B. proteus*. Four cases of tularemia have responded very satisfactorily. It has been disappointing against group A streptococci, *H. pertussis*, and not consistent in its action against pathogenic strains of *E. coli* and *D. pneumoniae* (10).

VANCOMYCIN (VANCOCIN)

Another new antibiotic, bactericidal in action, which is particularly useful against gram-positive bacteria, is vanco-

mycin. Organisms develop resistance to it very slowly. It is particularly useful against serious infections due to staphylococci which have developed resistance to other drugs.

Vancomycin must be given intravenously. In children a dose of 20 mg./pound/day divided into two or three doses is satisfactory in most infections. In adults 2 grams per day is the usual dose. Doses larger than this should be used with caution especially in patients with impaired renal function.

The chief reactions to vancomycin are local. A chemical phlebitis and local irritation of the tissues at the site of injection frequently occur. It may also produce a drug fever as well as an erythematous skin rash. Although decreased auditory acuity has occurred with excessively high serum concentrations, the use of vancomycin is not as likely to be associated with the serious complications which may follow some of the other new antimicrobial agents. The fact that it must be given intravenously makes indiscriminate use unlikely and therefore a very useful drug for serious staphylococcal infections.

We have had moderate experience with this agent in the treatment of staphylococcal infections. The results have been quite excellent in several children with severe life-threatening infections (10).

RISTOCETIN (SPONTIN)

This is a new antibiotic which has recently been made commercially available. It is not consistently bactericidal, however, as it is frequently stated to be. It is indicated in the treatment of gram-positive bacterial infections, particularly infections due to drug-resistant staphylococci, and it may also be used in streptococcal and pneumococcal infections. Its two components, ristocetin A and B, are combined in the proprietary preparation.

In its present form ristocetin is to be administered only by the intravenous route. The majority of staphylococcal infections will be controlled by 25-50 mg./kg./day. However, in endocarditis due to relatively resistant strains where vegetations or abscesses occur, dosages as high as 75 mgm./kg./day may be used. The 24 hour requirement is divided into two or three portions and used every eight or

twelve hours. The maximum concentration recommended for intravenous administration is 1.25 ml. at the rate of 2 ml. per minute. It should be given in an intravenous infusion of 5 per cent dextrose and water and complete administration should require no longer than 30 to 35 minutes. If much longer, the peak levels of the antibiotic in the circulation will not be obtained. With acute infections that respond favorably the parenteral program should be continued for several days after clinical improvement becomes evident in order to avoid relapse. In stubborn infections, the duration of therapy is determined by judgment and experience. When high dosages are employed for severe infections it may be reduced to 25 mg./kg./day following clinical response.

The most disturbing side effects from the use of ristocetin have been neutropenia. In early clinical studies this was noted in approximately 7.5 per cent of patients receiving this solution. The manufacture of ristocetin recently has been considerably improved and physicians are tending to use lower dosages. Presumably because of these factors the incidence of neutropenia has fallen to 2-3 per cent of the cases treated (11). In most patients the neutropenia spontaneously clears after the drug has been stopped. In order to detect neutropenia in the incipient stages, leukocyte and differential count should be performed daily during the course of therapy. Until more has been learned about this agent, it is advised provisionally that the drug be discontinued if an originally high total leukocyte count falls below 5,000 cells/cu. mm. or if the percentage of neutrophils falls below 50 per cent of the total white count when the latter exceeds 5,000 (11). In some patients the neutropenia may be preceded by eosinophilia.

Thrombocytopenia has also been reported as a reaction to the drug. Periodic urinalyses may be done as a safeguard against nephrotoxicity although the likelihood of this complication is minimal.

An intramuscular form of the drug may become available in the future.

SULFAMETHOXYPYRIDAZINE (KYNEX, MIDICEL)

Recently a new sulfonamide compound, sulfamethoxypyridazine, has been intro-

duced into clinical usage. This agent differs in several respects from currently available sulfonamides. The new agent is promptly absorbed after oral administration and the free form of the drug is excreted very slowly in the urine. This results in long sustained high plasma concentration of free drug with dosages much lower than that required to attain similar concentration with several other sulfonamide agents. With doses of 30 mg./kg. evidence of the drug is still demonstrable in the serum one week later (12).

Assays of plasma and urine following administration of single oral doses of three sulfonamides revealed that sulfamethoxypyridazine yields plasma concentration almost double those of sulfisoxazole (Gantrisin) or sulfadiazine after similar doses. While the two latter drugs were largely cleared from the plasma after 24 hours, there remained almost 8 mg. per cent of free sulfamethoxypyridazine after 48 hours (12).

In children the initial dose is 250 mg/20 pounds of body weight after meals. The maintenance dose is 125 mg/20 pounds. This dose can be given once daily. The usual adult dose is 1 gram initially and then 0.5 grams daily.

As is the case with all new drugs, reports of toxic reactions have appeared. When the drug is used in proper dosages, the incidence of serious reactions does not seem to be any higher than with other sulfonamides. However, because it is excreted so slowly, it is essential that the dose be correct and administered at proper intervals; otherwise potentially serious plasma concentrations can develop.

More recently another sulfonamide, sulfadimethoxine (Madribon), with characteristics similar to sulfamethoxypyridazine has been introduced.

THE USE OF CHLORAMPHENICOL IN COMBINATION WITH GAMMA GLOBULIN IN THE MANAGEMENT OF INFECTIONS

Passive transfer of antibodies through gamma globulin provides protection for several months. Also employed as a protective agent against some of the more common contagious diseases gamma globulin permits more competent participa-

tion by the host in the fight against established infections. Rationale for immuno-antibiotic therapy lies in simultaneous direct attack on the pathogen and reinforced host resistance, which implies usefulness in treatment for acute fulminating and highly refractory infections.

In careful control studies in mice Fisher, using pooled human gamma globulin and chloramphenicol concurrently, demonstrated a high degree of therapeutic effectiveness in infected animals. Five types of infection induced with species of staphylococci, streptococci, proteus, and *Pseudomonas* responded to joint therapy with gamma globulin and chloramphenicol, each agent having shown at deliberately low doses in previous work little or no activity in these mouse infections when used separately. Waisbren showed marked clinical improvement in six of forty-six acutely ill patients by the use of this regimen. It was concluded that in certain instances the addition of gamma globulin to antibiotic therapy may give clinical results that could not have been obtained with the antibiotics used alone. In each of these cases a long and extensive control period in which antibiotics were being vigorously administered had failed to produce a response but when gamma globulin was given with approximately the same dosage of antibiotic rather marked improvement occurred. The lack of controls in clinical studies do not permit a final decision of the effectiveness.

Further studies revealed that marked increases in survival rates in experimental animals may be anticipated in any infection when chloramphenicol has previously demonstrated therapeutic activity. More than a simple additive effect is obtained in all the experimental infections except *pasteurella*. This is almost universally an animal infection and it is postulated that donors of gamma globulin have not had experience with *pasteurella* infections. By absorbing the gamma globulin against specific serum antibody before treating animals infected with the homologous organism, this specific therapeutic effect is lost. Therefore this mechanism is probably due to a specific antibody factor.

Gamma globulin in combination with ristocetin and certain other antibiotics has shown essentially the same effects as when combined with chloramphenicol.

AMPHOTERICIN B (FUNGIZONE)

As a general rule the treatment of mycotic infections, particularly those with systemic dissemination, has been unsatisfactory. Recently a new antibiotic, amphotericin B, has been isolated and has shown definite antifungal effects.

In a study of several patients with severe histoplasmosis, many were definitely benefited. Good results have also been obtained with cryptococcal infections including *torula meningitis* and certain systemic fungal diseases.

Dose: Start with 0.25 mgm/kg/day and gradually increase to 1.0 mgm/kg/day. The total daily dose should not exceed 1.5 mgm/kg/day. The drug must be given intravenously.

Fever, nausea and vomiting are common reactions but can be prevented in part with premedication with aspirin and antihistaminics. The NPN should not be allowed to rise over 40 mgm/100 ml. and can be controlled by omitting one or more daily doses of the drug.

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What's NEW

The Repository Treatment of Inhalant Allergies

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The repository treatment may well be the greatest advance in years in the management of inhalant allergies. In it we now have a method of markedly reducing the number of hyposensitizing injections.

For years it has been known that by prolonging the rate of absorption of an antigen, the immunity induced by it is increased. Good examples of this are the alum precipitated vaccines of tetanus, diphtheria, pertussis, etc.

Sutton, (1) who in 1923 reported using suspended pollens in olive oil, was the first to use the repository type of injection. In 1940 Freund and McDermott (2) used as an emulsion base a mixture of aquaphor and paraffin oil. Loveless, (3) using Freund's adjuvant, found antibody titers heightened and prolonged. Salk (4) in 1951 used this approach with influenza vaccine. Brown (5-10) states, "All the basic studies of making emulsions for repository injection of pollens in mineral oil were worked out by Loveless. She should receive credit for the greatest advancement to date." Brown in a report to the American College of Allergists in March, 1960, state that he has now given over 9,000 repository injections. Without doubt he has done more than anyone to perfect the technique.

Dr. Fred Davenport, University of Michigan School of Public Health, and Dr. Jonas Salk, University of Pittsburgh, reported on the use of emulsified mineral oil vaccines to a recent (1960) International Conference on Asian Influenza. Dr. Davenport said that more than 100,000 doses of emulsified vaccine have been administered without any ill effects in field trials thus far. They advocated more extensive use of emulsified mineral oil vaccines for influenza to attain higher

antibody titers and longer duration of immunity. They stated that antibody levels remain elevated for at least three years after vaccination with mineral oil emulsions.

A properly emulsified extract will show droplets microscopically one-tenth the size of a red blood cell (0.7 to 0.8 micron). Therefore a 1 cc syringe should contain about 50,000,000,000 tiny globules. A familiar example of an emulsion is mayonnaise. In therapy the globules must be much smaller and the emulsion more complete to avoid systemic reactions and sterile abscesses.

Patient acceptance is overwhelming. This method is gratefully accepted by the practicing physician who dislikes the conventional treatment because of the tediousness involved or the possibility of reactions. In fact, Brown says that physicians' acceptance of the single visit injection for themselves or for members of their families was unanimous.

Patients sensitive to tree, weed, and grass pollens would need an injection for each yearly until proven that the immunity lasts consistently longer than one year. House dust, mold spores, viral vaccines, and bacterial vaccines may be given in emulsified form.

The safety and results of treatment appear to be better than with the conventional type of treatment. Brown reported treating 164 tree pollen sensitive cases without a single systemic reaction. In 383 grass sensitive patients there occurred only five mild reactions which were chiefly urticaria and a "blocked nose." With present day, properly made emulsions, the reaction rate is less than one to one thousand.

Treatment by repository injection is especially welcomed by the following pa-

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tients: (1) Those who live too far from the physician to make regular weekly visits; (2) those who travel a great deal; (3) those physically unable to make office visits comfortably if at all; (4) those in advanced stages of pregnancy; (5) those whom the attending physician does not need to see frequently.

There is no doubt that reactions do occur. Physicians should be prepared to handle them properly. A new technique of testing, classification, and treatment is required when using emulsified pollen extracts. The time necessary for determining the dosage by biological titration is about thirty minutes. Properly equipped office space and suitable equipment are mandatory for this type of treatment.

Advocates of the repository treatment claim two valid reasons for giving the emulsified extracts: First, they are safer to give and, secondly, clinical results occur more promptly and are definitely much longer lasting.

In their present state the repository injections are probably not the final answer to the problem of treating pollinosis. They probably do represent a giant step forward to safer and easier methods of freeing the patient from multiple injections.

In summary, during the past sixty years many attempts have been made to treat pollinosis with a minimum number of visits. Although not yet generally available or suitable for all patients, there are indications that the single an-

nual emulsion injection will replace the present method of treating pollinosis in most patients.

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A TEACHING SEMINAR
FROM THE
UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE

Clinical Tests of Adrenocortical Function*

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Clinical manifestations of adrenocortical dysfunction are usually obvious. Laboratory confirmation consists in the demonstration of abnormal adrenocortical hormone production. Non-specific tests cannot be relied upon consistently so that decisions regarding surgical extirpation of the adrenals and/or lifetime hormone replacement must rest firmly on measured alterations of blood hormone concentrations and urinary metabolite excretion. Specific assessment is mandatory in the so-called "borderline" disorders. Representative of these conditions are obese women with hirsutism, hypertensive plethoric individuals with diabetes and adolescents with truncal obesity and striae. All of the examples cited are commonly observed and all present certain features of adrenocortical hyperfunction.

A number of individuals with salt wasting and hypotension have hyperpigmentation and are clinically indistinguishable from patients with classical Addison's disease. On the other hand, a number of patients have been reported whose appearance is normal but who manifest acute adrenocortical insufficiency when subjected to stress.

In the past decade, intensive investigation of methods for estimation of adrenocortical hormone production has been carried out. A few of these methods are suitable for routine laboratory use. This report will confine itself to the application and interpretation of some of these procedures.

CHEMICAL AND PHYSIOLOGICAL CONSIDERATIONS

In excess of forty steroids have been isolated from adrenocortical tissue or adrenal venous effluent:

Corticosteroids — C-21 steroids with three or more oxygen atoms. These are formed exclusively in the adrenals.

Progestins — C-21 steroids with less than three oxygen atoms having progestational activity.

Androgens — C-19 steroids with an oxygen atom of C-17 (17-oxo- or 17-ketosteroids and precursors) having androgenic activity.

Estrogens — C-18 steroids with estrogenic activity.

Two corticosteroids (C-21), cortisol and aldosterone, account for most of the biological activity of the adrenal cortex (Fig. 1).

THE CORTICOSTEROIDS

Cortisol is the predominant corticosteroid product of the normal human adrenal cortex (1). It is anti-inflammatory and a regulator of "organic" metabolism (protein and carbohydrate) hence is referred to as a glucocorticoid. It circulates in the blood in a concentration of from 4-30 micrograms/100 ml. plasma. The plasma concentration of cortisol follows a definite diurnal rhythm with a peak in the morning and trough in the evening. The daily production of cortisol averages approximately 20 mg. A continuous infusion of corticotropin (ACTH) results in a maximal peripheral blood concentration of cortisol within four hours which thereafter remains constant for the duration of the infusion. Such maximal constant stimulation results in the production of 150-250 mg. of cortisol and cannot be further augmented by increasing the dose of corticotropin (2). The average daily production rate of cortisol agrees with the replacement requirements of Addisonian and of totally adrenalectomized patients amounting to 20 to 30 mg. per day.

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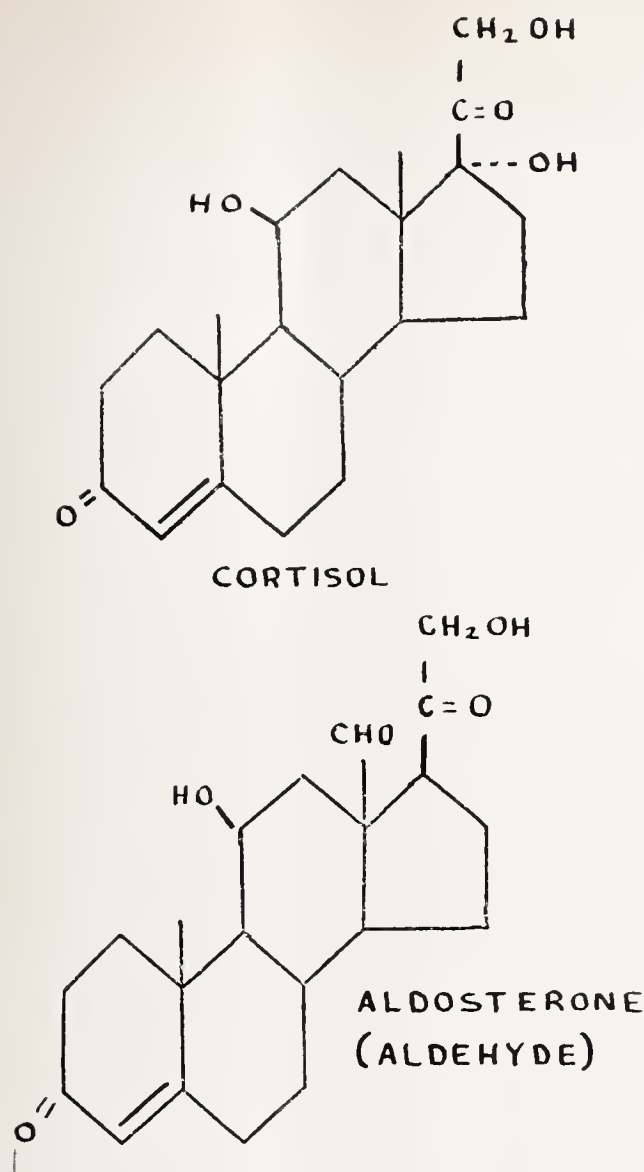


Figure 1

Cortisol is enzymatically inactivated in the liver by reduction to a number of metabolites which are rapidly conjugated with glucuronic acid to form water-soluble glucuronides which are excreted in the urine.

Two major groups of metabolites are measured by methods currently employed in the clinical laboratory. In the first group reduction of the first ring of the steroid nucleus occurs without alteration of the C-17 side chain. These cortisol metabolites are known as Porter-Silber chromogens or 17-hydroxycorticosteroids (17-OHCS). The C-17 side chain reacts with phenylhydrazine to form a yellow compound which is easily measured (3). It is this reaction which has enjoyed the widest clinical usage, as both cortisol in plasma and urinary metabolites may be

measured. These compounds in urine (tetrahydrocortisone, tetrahydrocortisol and allotetra-hydrocortisol) account for 20-30% of the urinary metabolites of cortisol. (Fig. 2)

The second group of metabolites (20-40%), (cortols and cortolones) are reduced as described above but, in addition, the C-20 carbonyl group is reduced to form a C-17 glycerol side chain. (Fig. 2)

When both groups of metabolites are treated with sodium bismuthate, the C-17 side chain is oxidized to form 17-ketosteroids. Norymberski first applied this procedure (4) and referred to these steroids as 17-ketogenic (17-KGS).

In the Norymberski procedure for 17-KGS, the Zimmerman reaction (5, 6) is employed for 17-ketosteroids (17-KS) using m-dinitro-benzene to form a violet colored compound.

Aldosterone is the most potent hormonal regulator of sodium and potassium metabolism and is secreted at a rate of 150-300 micrograms per day. Its plasma concentration varies from 0.04 to 0.08 micrograms/100 ml. Aldosterone secretion is stimulated by a reduction of intravascular fluid volume, potassium loading and transiently with ACTH. Aldosterone stimulating hormone (glomerulotropin) is a lipid complex originating in the posterior hypothalamus, possibly the pineal gland and subcommissural body (7).

At the present time, all methods for the measurement of aldosterone or its metabolites in the urine are tedious because partition chromatography on filter paper using at least three solvent systems is required. The method of Neher and Wettstein (8) or a suitable modification is generally employed for a fraction representing 5-10% of the daily production. Interestingly, the "pH 1 3-oxo-conjugate" is biologically active. The possibility of a simpler method is suggested by the isolation of a "tetrahydro" metabolite by Ulick, Laragh, and Lieberman (9).

ADRENAL ANDROGENS

Dehydroepiandrosterone (DHEA) is weakly androgenic and exists in the peripheral blood in higher concentration than other steroid hormones. Its production rate has been estimated to average 55

in allergic and inflammatory skin disorders (including psoriasis)



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• **effective control**
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At the recommended antiallergic and anti-inflammatory dosage levels, ARISTOCORT means:

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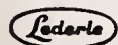
Precautions: With ARISTOCORT all traditional precautions to corticosteroid therapy should be observed. Dosage should always be carefully adjusted to the smallest amount which will suppress symptoms.

After patients have been on steroids for prolonged periods, discontinuance must be carried out gradually over a period of as much as several weeks.

Supplied: 1 mg. scored tablets (yellow); 2 mg. scored tablets (pink); 4 mg. scored tablets (white); 16 mg. scored tablets (white).

Diacetate Parenteral (for intra-articular and intrasynovial injection). Vials of 5 cc. (25 mg./cc.).

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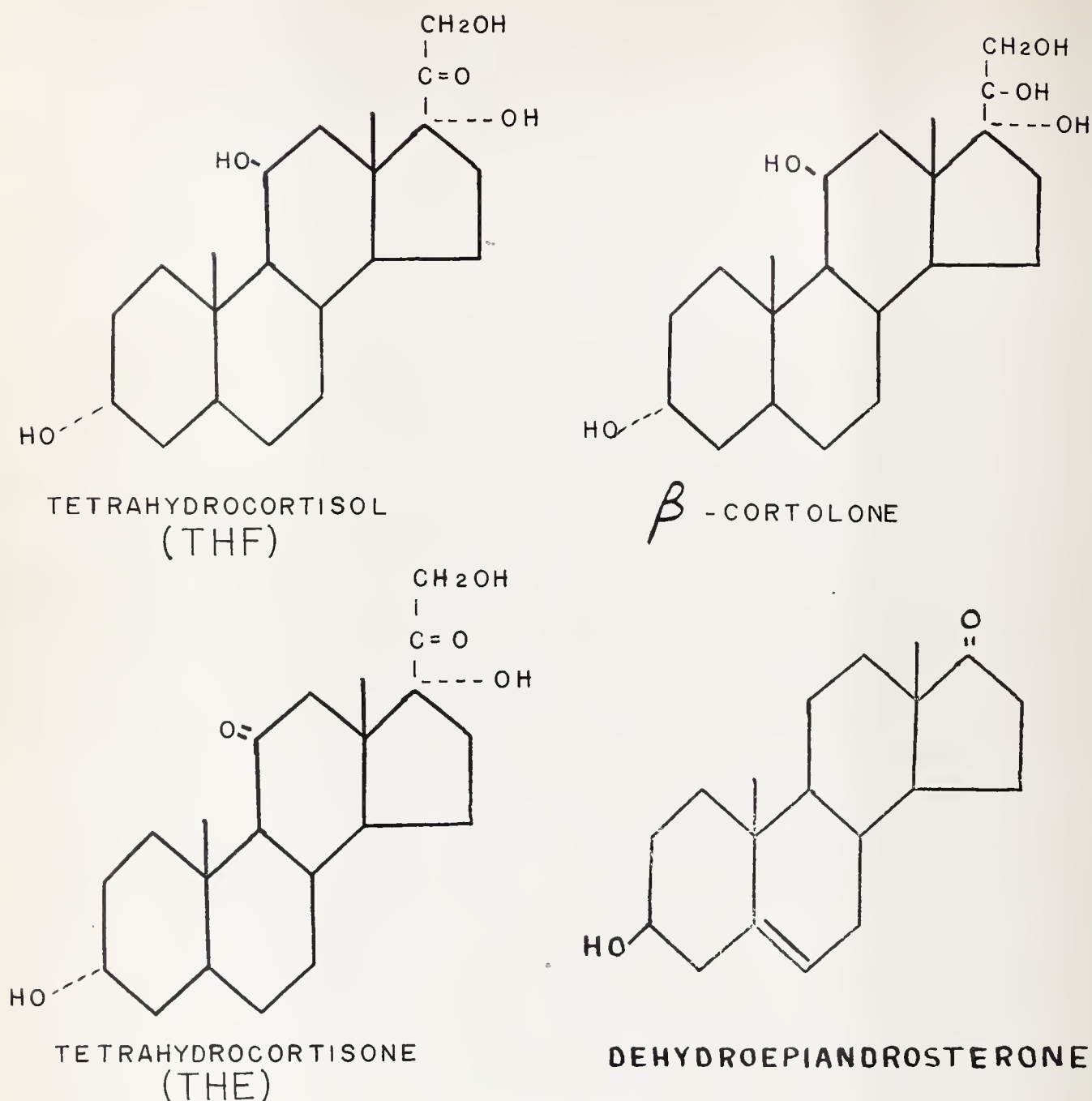


Figure 2

mg. per day. DHEA appears to be the principal precursor of the urinary 17-KS (androsterone and etiocholonolone.) DHEA is exclusively of adrenal origin. Its precursor, 17 α -OH-pregnenolone, may be secreted into the circulation where it is oxidized to DHEA, (Fig. 2)

It is unfortunate that the urinary 17-KS procedure is used as a parameter of adrenocortical function in any of the adrenal disorders except those characterized by virilism. The urinary 17-KS excretion is the least reliable index of adrenocortical function.

In Table 1 are listed normal values for

urinary excretion of 17-OHCS, 17-KGS, and 17-KS.

CLASSIFICATION OF ADRENOCORTICAL DYSFUNCTION

I Adrenocortical Hypofunction

- A. Primary — underproduction of cortisol, aldosterone and adrenal androgen
 1. Acute—Addisonian crisis
 - ? Waterhouse-Friderichsen Syndrome
- B. Secondary — underproduction of cortisol due to reduction or absence of ACTH stimulation
 1. Panhypopituitarism

2. Adrenal steroid hormone therapy with pituitary suppression
- C. Primary isolated corticosteroid deficiency — virilizing hyperplasia

II Adrenocortical Hyperfunction

- A. Cushing's syndrome — cortisol excess due to
 1. Bilateral hyperplasia or tumor
 2. Bilateral hyperplasia and pituitary tumor with pigmentation — (ACTH excess?)
 3. Bilateral hyperplasia associated with extra-adrenal malignancy
- B. Conn's syndrome of aldosterone excess due to tumor or hyperplasia — primary aldosteronism
- C. Secondary aldosteronism
- D. Adrenal virilizing syndromes due to neoplasia or hyperplasia (congenital virilizing hyperplasia)
- E. Mixed syndromes — corticosteroid and androgen excess

I Adrenal Cortical Hypofunction

- A. Primary Adrenal Insufficiency
 1. Acute — A provisional diagnosis of acute adrenocortical failure or Addisonian crisis requires that treatment be instituted without delay. Confirmation by a corticotropin response test should be postponed until recovery is obtained. The presence of pigmentation, hyponatremia, hyperkalemia and azotemia in a patient with peripheral circulatory failure is strongly suggestive of Addison's disease, however, the identical clinical picture may occur in salt-losing nephritis. Failure of the patient to conserve administered sodium while receiving adequate replacement of adrenal steroid hormones suggests a primary renal lesion. Peripheral vascular collapse due to septicemia has been attributed to secretory failure of the adrenals since the original reports of Waterhouse (10) and Friderichsen (11). To date, permanent adrenal insufficiency has not been noted in those patients who have survived the Waterhouse - Friderichsen syndrome. Melby and Spink (12) have reported the concentrations of cortisol in the plasma of 22 patients with shock due to infection and all values were

higher than basal levels measured in healthy subjects. In six patients tested there was a rise in plasma cortisol following the administration of corticotropin. Finally, the therapeutic effects of administered cortisol in these cases cannot be regarded as due to "replacement" because doses of the steroid hormones 'required' greatly exceeded the maximum secretory capacity of the adrenal cortex. It is probable that acute adrenal insufficiency is not a feature of the Waterhouse-Friderichsen syndrome.

2. Chronic Adrenocortical Insufficiency — Addison's Disease. The frequency of diagnosis of Addison's Disease has increased. This increasing recognition is due in part to the availability of specific tests of adrenocortical function. In addition the entity of "partial" adrenal insufficiency has been recognized in which a remnant of functioning adrenal cortex is continuously stimulated by endogenous corticotropin to produce a normal basal steroid output. When an infusion of corticotropin is given, however, no rise in plasma cortisol can be detected. The patient with "incomplete" or "partial" Addison's Disease lacks adrenocortical reserve and symptoms are precipitated by trauma or febrile illness but may be absent or minimal without the superimposition of stress.

The diagnosis of adrenal insufficiency can be established reliably only by the demonstration of failure to increase blood cortisol levels or urinary 17-hydroxycorticosteroid (17-OHCS) or 17-ketogenic steroid (17-KGS) excretion in response to intravenous or intramuscular injections of corticotropin (ACTH). Urinary 17-ketosteroid (17-KS) excretion is unreliable as an index of adrenocortical functional capacity. A single determination of plasma cortisol, 24 hour urinary excretion of 17-OHCS or 17-KGS is not useful in the diagnosis of adrenal insufficiency and may be misleading. A test standardized by Jenkins et al. (13)

CLINICAL TESTS OF ADRENOCORTICAL FUNCTION

Table 1

Mg. Excreted in Urine/24 Hours		
17 OHCS	17-KGS	17-KS
3 - 12 (both sexes)	5 - 26 (males) 4 - 17 (females)	8 - 23 (males) 5 - 18 (females)
After 8 hour ACTH Infusion 15 - 45		

Table 2

EFFECT OF ACTH (25 U.S.P. UNITS INTRAVENOUSLY OVER A
FOUR HOUR PERIOD) ON PLASMA CORTISOL CONCEN-
TRATIONS IN NORMAL SUBJECTS

Subject No.	Age	Sex	Plasma cortisol (ug/100ml.)	
			Before ACTH	After ACTH
1	54	M	16	52
2	37	M	5	32
3	45	M	19	40
4	72	M	15	63
5	31	F	10	38
6	52	F	24	44
7	21	F	14	51
8	36	F	21	52
Mean = 15 ± 6*			Mean = 46 ± 10	
Range = 5 — 24			Range = 32 — 63	

*Standard deviation.

Table 3

EFFECT OF ACTH (25 U.S.P. UNITS INTRAVENOUSLY OVER A
FOUR HOUR PERIOD) ON PLASMA CORTISOL CONCENTRATIONS
IN PATIENTS WITH ADDISON'S DISEASE

Subject	Age	Sex	Plasma cortisol (ug./100 ml.)	
			Before ACTH	After ACTH
M. O.	52	M	29	26
M. J.	35	F	13	12
E. G.	40	F	18	12
D. P.	50	M	26	22
W. R.	51	M	2	0
R. D.	38	M	2	1
W. N.	33	M	0	0
M. D.	35	F	0	0
D. O.	53	M	0	0
Mean = 10			Mean = 8	
Range = 0 — 29			Range = 0 — 26	

for urinary excretion of 17-OHCS is commonly employed:

24-hour urine collections are made on two control days and two consecutive days during which 25 I.U. of ACTH is injected intravenously over eight hours. Normal subjects excreted 1-10 mg 17-OHCS per day on control days and increased excretion to 5-25 mg. on the first day of ACTH stimulation and to 15-41 mg. on the second day. Patients with Addison's Disease fail to excrete additional 17-OHCS on days of ACTH stimulation.

Christy et al (14) simplified the testing of adrenocortical functional capacity by measuring the change in concentration of cortisol in the plasma before and after a four hour intravenous infusion of ACTH. A similar procedure has been used by the author for the past four years:

An intravenous infusion of 25 U.S.P. units of ACTH (Upjohn, Sterile Corticotropin Injection) dissolved in 500 ml. of 5% dextrose in saline is given over a period of four hours. Fifteen ml. heparinized blood is secured initially and at the conclusion of the infusion of ACTH. The erythrocytes are separated from the plasma within 30 minutes. The plasma samples are frozen until determinations of

cortisol are made. A modification of the method of Silber and Porter (3) as described by Peterson et al. (15) is employed for analysis. The results for eight normal subjects are summarized in Table 2. The mean control value for cortisol was 15 ug/100 ml. of plasma with a range of 5-24 ug. per cent. Following the infusion of corticotropin the concentrations rose to a range of 32 to 63 ug. per cent with a mean of 46 ug. per cent.

ACTH stimulation tests were carried out in nine patients with Addison's Disease. These results are summarized in Table 3. It is apparent that no response to ACTH in any patient was obtained. This remarkable separation from the normal group has been observed repeatedly. Because of its high validity we have adopted this test as the *sine qua non* for the definitive diagnosis of adrenal insufficiency.

B. Secondary Adrenocortical Insufficiency

It should be emphasized the aldosterone deficiency is not ordinarily observed in hypopituitarism. Some patients develop hyponatremia and its cause is incompletely understood. On the other hand, hyperkalemia is not observed. The pallor of panhypopituitarism differentiates it from the hyperpigmentation of Addison's Disease.

Table 4
EFFECT OF ACTH (25 U.S.P. UNITS I. V. OVER 4 HOURS)
ON PLASMA CORTISOL CONCENTRATIONS IN
PATIENTS WITH PANHYPOPITUITARISM BEFORE
AND AFTER DAILY ACTH STIMULATION

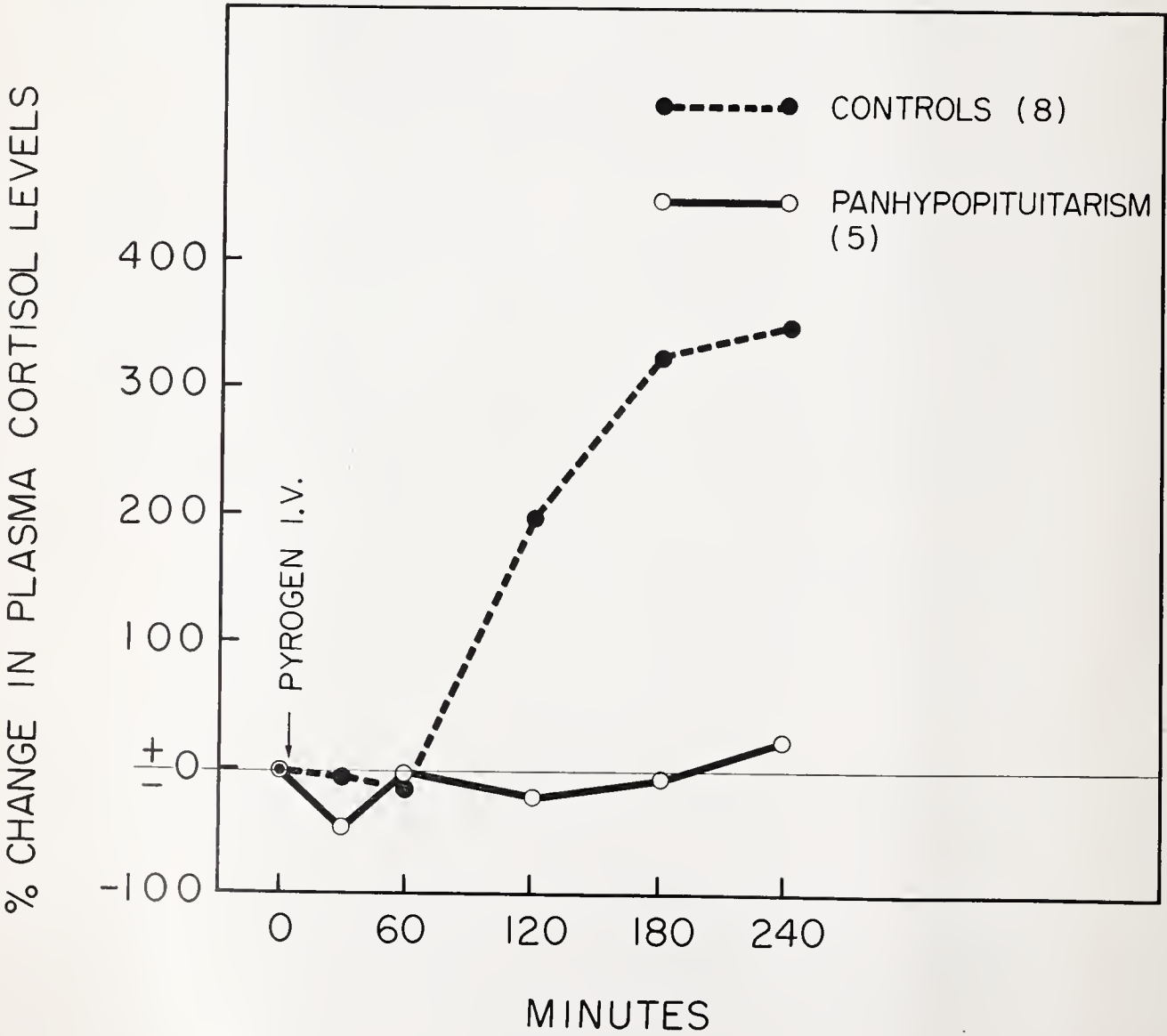
Subject	Age	Sex	Plasma Cortisol (ug./100 ml.)			
			Initial Test		After ACTH 80 u IM x 4	
			Before ACTH	After ACTH	Before ACTH	After ACTH
A. P.	69	F	1	13	—	—
O. L.	39	M	0	0	32	39
C. A.	56	M	5	11	33	61
Q. S.	30	M	8	20	28	36
W. F.	45	M	8	29	—	—
L. D.	57	M	14	21	44	89
R. F.	59	M	19	22	10	34
F. N.	25	M	0	6	0	17
J. B.	26	M	5	7	—	—

CLINICAL TESTS OF ADRENOCORTICAL FUNCTION

Patients having panhypopituitarism may have attenuated responses to stimulation by exogenous ACTH. There may be overlap with the normal control responses. The ACTH test will ordinarily separate primary from secondary adrenocortical insufficiency. However, in some patients with panhypopituitarism, no response may be detected on the initial ACTH test. Repeated stimulation of the adrenal cortex with zinc-corticotrophin (80 units IM daily for four days) restores normal responsiveness of the adrenal to intravenous ACTH. In Table 4 the responses of nine patients with panhypopituitarism are tabulated. Investigations on the effect of bacterial pyrogen on pituitary-adrenal secretory activity (16) lead to the development of a new clinical procedure, the pyro-

gen test, for the assessment of ACTH production in patients following steroid therapy and in patients with hypopituitarism (17). Blood samples for plasma cortisol determinations are obtained before and at 30, 60, 120, 180 and 240 minutes after an intravenous injection of Pyrexal Rx or Lipexal Rx*, a lipopolysaccharide (endotoxin) derived from *Salmonella abortus equi*. In healthy subjects, the injection of pyrogen is followed in two hours by an abrupt rise in plasma cortisol concentration. In patients with panhypopituitarism and patients receiving large doses of cortisol or its analogs, no response is obtained. (Figure 3) Pituitary-adrenal responsiveness to injected pyrogen gradually improves up to five

*Kindly supplied through the courtesy of Dr. Fred Schultz of the Wander Company, Chicago, Illinois.



months after the discontinuance of hormone therapy (18).

II Adrenocortical Hyperfunction

A. Cushing's Syndrome of Cortisol Excess

The diagnosis of Cushing's syndrome due to either hyperplasia or tumor of the adrenal cortex is confirmed only when urinary excretion of 17-OHCS (more than 12 mg./24 hours) is clearly elevated. The excretion of 17-KGS correspondingly reflect the excessive production of cortisol. Measurement of 17-KS excretion is not helpful in pure Cushing's syndrome. It should be emphasized that 17-OHCS excretion may fluctuate considerably, thus repeated urinary specimens should be examined if clinical findings warrant (19).

In those cases of Cushing's syndrome so studied, it has not been possible to demonstrate the normal diurnal variation of cortisol levels in the plasma. If, for example, the 8 a.m. level does not exceed the 8 p.m. level, the diagnosis of Cushing's syndrome is nearly certain.

Hyperresponsiveness to ACTH in terms of blood cortisol levels and urinary 17-OHCS excretion is commonly present but not invariably. Further, the hyperresponse to ACTH may be elicited in patients having tumors of the adrenal cortex and cannot be relied upon to distinguish hyperplasia from tumor.

Suppression of 17-OHCS excretion in urine to near zero levels can be accomplished in normal subjects with potent cortisol analogs (dexamethasone, fluoroprednisolone) in a dosage of 2.0 mg./day. Most patients with Cushing's syndrome continue to excrete excessive amounts of 17-OHCS in urine on this dose of the cortisol analog.

Doses of 8.0 mg. or more per day of these potent cortisol analogs will result in suppression of 17-OHCS output in urine in patients whose Cushing's syndrome is due to bilateral adrenocortical hyperplasia. This effect is usually not observed when the condition is due to tumor.

In summary, when elevated amounts of 17-OHCS are excreted in the urine in a patient having the clinical mani-

festations of Cushing's syndrome, the diagnosis is confirmed. It is generally agreed that no present test invariably differentiates between hyperplasia and tumor, although the suppression tests are most often correct. Patients who have Cushing's syndrome should undergo surgical exploration of the adrenal glands, especially since the most reliable and definitive therapy (excision) can be accomplished. However, when hyperpigmentation is associated with the other features of Cushing's syndrome, an ACTH producing pituitary tumor should be ruled out (20).

B. Conn's Syndrome of Mineralocorticoid Excess — Primary Aldosteronism

The constellation of muscular weakness, tetany, polyuria, polydypsia and paresthesias associated with hypertension in a non-edematous patient with laboratory findings of hypokalemia, alkalosis, hypernatremia, alkaline urine, isosthenria and proteinuria is almost certainly due to the excessive production of aldosterone. The classical features of Conn's syndrome (21) are found in approximately one-fourth of the patients examined who are proved subsequently to have mineralocorticoid excess.

The diagnostic criteria for this "not-so-rare" disorder (perhaps 200 cases have been recognized since 1955) are inadequate. When renal insufficiency supervenes due to the hypertension, the biochemical findings become difficult to interpret.

The measurement of urinary aldosterone excretion is difficult and when carried out successfully is often unrewarding as the value may not be greatly elevated. The so-called "secondary" aldosteronism of nephrotic syndrome, cirrhosis with ascites, congestive heart failure and malignant hypertension is associated with much higher levels of aldosterone in the urine than are observed in cases of primary aldosteronism. The presence of hypokalemia in patients with malignant hypertension is not unusual so that the separation of primary from secondary aldosteronism may be impossible when hyperaldosteronuria is also present in both.

C. Adrenal Virilizing Syndromes

The excretion of increased amounts of 17-KS in urine by the female is almost always due to hyperplasia or tumor of the adrenal cortex. When 17-KS excretion is in excess of 50-60 mg., the presence of large amounts of dehydroepiandrosterone can be detected by a simple procedure, the Allen test (22). When positive, the presence of an adrenocortical tumor is almost certain. However, tumor cannot be reliably differentiated from hyperplasia in all cases.

The presence of increased amounts of pregnanetriol in urine suggests a genetic disturbance, congenital virilizing hyperplasia. A simple comparison of 17-OHCS with 17-KGS (17-KGS would include pregnanetriol) is indicative of the adrenogenital syndrome in that the 17-OHCS may be normal or low while the 17-KGS are elevated. We have found this simple screening procedure very helpful.

CONCLUSIONS

1. Primary adrenocortical insufficiency is proved if ACTH infusions fail to increase the level of blood cortisol or excretion of urinary cortisol metabolites (18-OHCS and 17-KGS).

2. Secondary adrenocortical insufficiency is demonstrated by the failure of injected bacterial pyrogen to increase blood cortisol levels in an individual responding normally to ACTH.

3. Cushing's syndrome of cortisol excess may be confirmed by the presence of elevated 17-OHCS or 17-KGS excretion in urine.

4. Suppression tests using potent cortisol analogs may indicate the presence of an autonomously functioning tumor when doses of 8 mg. per day of dexamethasone fail to suppress 17-OHCS output. The converse relationship is not entirely reliable. ACTH stimulation tests are usually not helpful.

5. Conn's syndrome of mineralocorticoid excess is defined by the demonstration of inability to conserve potassium on a low K⁺ intake and hyperaldosteronuria in a potassium depleted, hypertensive patient.

6. Virilism due to excess production of androgen by the adrenal cortex is

usually associated with increased urinary 17-KS excretion. In congenital virilizing hyperplasia (adrenogenital syndrome), large amounts of pregnanetriol may be found. Low or normal 17-OHCS excretion coupled with increased 17-KGS excretion is highly suggestive of raised pregnanetriol levels in urine.

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What Is Your Diagnosis?



FOR ANSWER SEE PAGE 96

Arkansas Public Health at a Glance

Tuberculosis

JAMES M. KOLB, M.D.*

During the past half century scientific advances and improvement in community health services, as well as in the standard of living have helped push back tuberculosis in the United States. Arkansas has made marked improvements when compared with 60 years ago. However, when considered in the ratio to other states, we were third from the bottom in 1958, according to statistical report of the Arkansas Department of Health, division of tuberculosis control, released last May. The average for the nation is 7.8 deaths per 100,000 population. Arkansas' rate was 14.2. We are exceeded only by Arizona and Kentucky.

It is hoped that when the 1959 report is released in a few weeks, we will have moved up the ladder to at least midway.

In the past few years, much of the treatment of tuberculosis has shifted from official agencies to private physicians. With the treatment of patients at home, gaps in supervision and control have widened. Patients may or may not take their medicine, use precautionary methods to keep down the spreading of the disease and etc. Adequate laws to cover the forcible detention and control of those who refuse to take advantage of efforts to improve their condition and prevent the further spread of tuberculosis is one of the first steps to be sought, so far as I am concerned. Yes, we have laws, but they are not adequate and do not have enough control.

Historically, the early sanatorium movement set for itself the goal of isolation of all patients. The next goal (in the Twenties) was early detection of all patients by medical examinations, followed in the Thirties by the development of case finding through mass X-raying. In the Forties the aim was to make enough TB beds available for all patients and to find the cases hidden among apparently healthy individuals. In the Fifties, with

the coming of new drugs and especially I-Son-Iazid, successful treatment of every patient was projected.

The drug used alone or in combination with other drugs, offers great potentialities in tuberculosis control because of its low toxicity, low cost, ease of administration by mouth, and proved effectiveness against the disease. The V.A. studies indicate that 90 per cent of patients can be rendered non-infectious if treated properly with drugs—95 per cent if the cases requiring surgery are included. It can be expected that very few will relapse.

A local physician, treating a tubercular patient at home, is unable by himself to provide all aspects of care needed by the tubercular patient and his family. Furthermore, professional ethics prohibit him from insisting that a patient remain under his care for the long time that may be necessary—or even that the patient start treatment in the first place. Many people are simply hard to get and keep under treatment. Superstitions, low educational level, and many other factors may inhibit their full participation. The shift from hospital to home care has in many ways increased the cost of medical care for individuals through food, laundry, nursing care and etc.

Drug therapy is the heart of modern treatment, and we may leave the future of tuberculosis treatment to those who have dedicated their lives to this task. We hope drug resistant strains do not develop.

The number one problem is the finding of tuberculosis in very early cases and the prevention of the spread of this disease. We are accustomed to thinking of the "reservoirs of infection" as being chiefly among older people. This is true in terms of "rates". The Public Health Service estimates that 36 million Americans have tuberculosis, with 2/3 of them over 45. But, 1/2 the newly reported

*Clarksville, Arkansas.

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cases are in people under 45, and with 2.2 million people under 25.

Case finding may vary or take on many aspects depending on the local conditions. Thus a case in a crowded city would have more contacts to spread TB to than one in a rural area with a very few contacts.

The Mantoux skin test is efficient, reliable and the skin test of expert choice. However, it has the disadvantage that the use of a needle makes it necessary for a physician or nurse to give and read it.

It is hoped that a simple skin test may be developed, whereby large groups of children may be tested, in school programs for instance, at a very low cost and still be accurate. The present patch test is inadequate on many grounds, especially reliability.

Test under study for the past four years reveal that isonizid should be given to all children for at least a year who have a positive tuberculin test, to prevent the complications of tuberculous meningitis or miliary tuberculosis. Treatment may need to be continued longer if indicated.

In the fight against tuberculosis, emphasis is usually placed both on the individual (to get a checkup, a free X-ray, etc.) and on the state as a whole (the state sanatorium, state-wide Christmas Seal sale, etc.). A number of counties, however, have established chest clinics to attack the menace of tuberculosis on a local level. A clinic is an effective way to make your community safer by find-

ing, treating and following the source of danger—the people who already have tuberculosis and will not or cannot secure help. The idea of a chest clinic is not a new or original one—many other states have a comprehensive clinic system working quite well. Jefferson County in this state has had a clinic for over ten years. At present, there are 12 chest clinics of one form or another in the state.

Any tuberculosis control program involves three areas: case-finding, treatment and follow-up. A chest clinic can help in case-finding by providing a quick, easily-accessible opportunity to do skin-testing and sputum examination, and can facilitate making large X-rays on those suspects and contacts who need them.

A chest clinic can help in treatment: ideally all serious tuberculous illness should be isolated in a hospital while a suitable course of chemotherapy is started and the benefits of surgery are considered. In many cases a long course of drug therapy is necessary after leaving the hospital. Often a patient cannot or will not enter or stay in a hospital. Occasionally patients need drugs to prevent tuberculosis. In all of these areas a chest clinic can supply the supervision and the drugs which ordinarily can be terribly expensive to low-income families.

A chest clinic can provide the motive and the opportunity for more frequent X-ray and sputum follow-up in those places where cost, facilities and opportunity are a problem.

Editorial

The Drug Companies Perform a Public Service

ALFRED KAHN, JR., M.D.

The private drug companies perform a service of high order to the American people. In the United States there is a ready supply of drugs and pharmaceuticals available to the public through their physicians on very short notice.

Recently, the drug companies have been questioned by a congressional committee. One of the questions raised has been whether the markup on drugs has been too high. For example, if X drug costs \$1.00 to make and is sold for \$5.00, does the \$4.00 difference constitute profit. Some of the discussion at this committee hearing seemed to infer this was the case. This is most certainly not so. The actual ingredients of the drug are only part of the cost of the manufactured item. All new drugs require laboratory research for synthesis or extraction; they also require animal and then clinical research on humans to determine their effectiveness and safety. The cost of the development and testing of a drug should certainly figure in its price as sold by the manufacturer. And, for that matter, the manufacturer should make the price high enough to insure himself a reasonable profit—otherwise, why stay in business. It would appear that there is no place in a democracy steeped in the free enterprise system for a congressional hearing to try to infer that a manufacturer is making too much profit provided that there is no monopoly and provided that there is no collusion among manufacturers to artificially set high prices. It is pretty obvious that if a manufacturer can make and sell drugs cheaper than his competitor, he will sell his drugs before the artificially higher priced drugs of his competitor. Furthermore, as pointed out above, no one has proved the markup on drugs was not reasonable considering the cost of research and necessary advertising. Since when is profit in the absence of proved

monopoly or collusion in price fixing a reasonable subject for a congressional committee hearing in the United States? It is about time now for a frantic search through the school books to eliminate references to profit and earning; we can burn the old ones.

The drug manufacturers might well revise some of their policies in the public interest and without damage to themselves. Certainly, it has become an impossibility for any physician to learn all the trade names appended to as simple a drug as penicillin. There is no really valid, proved reason for Zilch Corporation's brand of penicillin to be called Zilchocillin instead of calling it Penicillin-Zilch or Penicillin-Jones or Penicillin-Smith. The manufacturers express the opinion that a special name builds up loyalty to a company who has the physician's confidence. Actually nothing could be further from the truth as the drug name often gives no clue as to the company or to the purpose for which it is used. The unfortunate names usually cause the perplexed and often harried physician to hasten to the nearest phone and ask his neighborhood druggist, "Say, what's in this new drug Donkurat; who makes it?" Why not make the integrity of the manufacturer the basis of appeal to the physician by using the correct name of the drug (not necessarily the chemical name) plus the manufacturer's name, as Penicillin Jones or Jones' Penicillin. The patient is often deprived of a cheaper, better drug because the physician does not know the product by the tradename.

The function of the detail man is somewhat open to scrutiny. Physicians as a group seem to be relying on the detail men sent by the drug firm than by the reports published in the medical journals. This is more an indictment of the physi-

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cian than the detail man. The detail man is an intelligent lay person untrained in discriminating between the claims of the rival products; the physician is able to do this but often does not take the time to read the published reports. The detail man is expected to give as glowing a report as possible of any drugs manufactured by his employer. It is true the detail man brings new drugs to the attention of the physician but indiscriminate "hard sell" brings a penalty which outweighs the good. This fault is the physician's for not being adequately informed through neglect of his professional journals. The detail man should visit the retail druggists and not the physician. This would promote the drug through its retail outlet instead of pressuring the physician.

Drug advertising has been assailed. This is nonsense. Good advertising probably reduces the cost of the drugs. Generally speaking, selling a larger quantity of a given drug reduces the price; the cost of overhead and research is defrayed by a large number of units thus materially decreasing one of the large factors in a drug's cost. How much advertising a company should buy is a function of management and is determined by the

result in sales. If slick magazine type drug house journals produce a beneficial sales result why criticize the company.

The result of intensive research has led to many new drugs. Many of these drugs are no improvement over older drugs and herein lies a problem. There has been a tendency of the drug firms to push the sales of these products. This is manifestly not advantageous to the patient. These drugs should be reported in the medical literature and then quietly put on the shelf to gather dust; perhaps a later use will be found for them. Unfortunately, many of these "analogue" drugs and drugs having a similar effect are marketed with great intensity. This leads to confusion in the physician's mind and adds to the welter of unnecessary drug stocks. Clearly, reputable firms ought to discontinue promoting unimproved drugs as a matter of public interest. Failure to do this may result in attempts at Federal control, a most undesirable prospect.

The private drug companies of America have been progressive. Some of their practices which are the result of custom and business pressures need to be modified for the best interest of the public and ultimately for the preservation of an unfettered drug industry.

MEDICINE IN THE NEWS

Among proposals of the Arkansas Medical Society at its annual meeting was one calling for an additional 2-cent state tax on each package of cigarettes to bolster funds for the University Medical Center at Little Rock.

Careful use of diagnostic radiology by competent radiologists is no greater hazard than that of most other hazards, members of the Arkansas Medical Society were told by Dr. Isadore Meschan, professor and head of the Department of Radiology of the Bowman School of Medicine at Wake Forest College when speaking at the annual meeting in Pine Bluff. Benefits from such diagnosis far outweigh the hazards when modality is properly utilized, Dr. Meschan said.

At the April meeting of the Mental Health Association, the formation of a state department of mental health was proposed. This new agency would coordinate and direct all activities in the field of mental health in the state. The resolution pointed out that prevention of mental illness and recovery of the mentally ill "is being seriously hindered by the division of responsibility between the several state agencies", and that this division results in a decrease of economy in the overall operation.

Dr. George M. Guest, research professor and director of the Children's Hospital, University of Cincinnati School of Medicine, held out hopes to the diabetic patient that in the future oral preparations will replace injections, in his speech before the recent convention of the AMA. Dr. Guest said that oral preparations have proven successful to a degree in older diabetic sufferers with mild cases, but hasn't shown good results in children. He added however, that eventually the injection will become obsolete as more progress is made in oral treatment.

The Arkansas Tuberculosis Association will combine with the Arkansas Medical

Society and state Board of Health in asking the Legislature for an appropriation to fight tuberculosis in the state. This action is the result of the study of a report which said that, through anti-tuberculosis serum, the disease can be conquered by a national crash program.

FEDERAL TRADE COMMISSION

The Federal Trade Commission has released information of interest to Doctors and their employees relative to the organization known as the American Registry of Doctor's Nurse and its successor, the American Registry of Doctor's Nurses. The complaint against the first mentioned organization, and the substance of its answer follows:

American Registry of Doctor's Nurse, 1366 National Press Bldg., Washington, D.C., has been charged by the Federal Trade Commission with misrepresenting that it is a non-profit organization, and with giving customers the means to misrepresent themselves as registered, graduate or licensed nurses.

Ralph Z. Bell, Robert L. S. and Evelyn W. Bickford, and Phillip Sellers, the concern's officials, also are cited in the FTC's Complaint.

The respondents sell memberships in the organization, insurance policies, certificates, pins, emblems, and other insignia and indicia to persons employed in doctors' offices.

The complaint charges that their business is not a nonprofit organization of professional nurses, as implied by the trade name, but is purely and simply a money-making operation conducted solely to sell these items.

Contrary to the trade name and claims in promotional material, the complaint continues, the business operation is not a certifying accrediting or qualifying body; and the respondents have no authority and are wholly incompetent to establish requirements for doctors' nurses or to certify that applicants have met such requirements.

These typical advertising statements are challenged.

"Its purpose is to register Doctor's Nurses as members in order that they may advance their status as proven members in their chosen field."

"Membership in the registry will offer assurance to the prospective employer that the member is a qualified individual."

"A certificate will be issued to each member. To use the letters RDN (Registered Doctor's Nurse) after your name to denote membership."

"To wear the official pin."

The pin consists of the caduceus with the letters "RDN" or "DN" superimposed, and the certificate "Certifies that _____ has fulfilled the requirements for membership in the American Registry of Doctor's Nurses and is entitled to all the rights and privileges pertaining thereto."

The pin and certificate, as well as the respondents' other articles, imply that members are registered, licensed or graduate nurses, although actually many are not, the complaint states. Thus, it adds, such members are given the means to misrepresent their professional or occupational status.

From Medical Economics, April 11, 1960

American Registry of Doctor's Nurses has consented to a Federal Trade Commission order that it stop misrepresenting itself as a nonprofit organization. Noting that the ARDN sells "memberships . . . certificates, pins, emblems, and other insignia . . . to persons employed in doctors' offices," the FTC said the company "creates the false impression (that it) is a nonprofit organization of professional nurses when it is purely and simply a money-making operation conducted solely to sell these items." (NOTE: On May 30, 1959 a news release was received stating that "The American Association of Doctor's Nurses, a new non-profit Association, has just been incorporated and has assumed the membership of the old American Registry of Doctors' Nurses." Offices continue to be located in Washington, D.C.)

* * *

The Arkansas Gazette, May 17, 1960, gave the following article date lined Paris:

French doctors and dentists were called on nationwide strike by their unions today to protest the government's new social security law limiting their fees.

They said their patients will get medical treatment as usual after the strike starts tomorrow. But they will refuse to fill out social insurance forms, thus throwing the state aid system in an administrative tangle. They will sign death certificates only when legally compelled to do so.

The decision to call the strike followed angry meetings lasting all day Sunday. Doctors and dentists claimed the new government social security plan violates their independence. It fixes fees for office visits at \$1.50 and home calls at \$2 with a slightly higher scale prevailing in Paris.

There are about 40,000 doctors in France. Some 20,000,000 Frenchmen are entitled to state Medical benefits.

* * *

From the Washington Office of the American Medical Association comes the following information:

THE MONTH IN WASHINGTON

Washington, D.C. — Politics now overshadows all other factors in the issue of health care for the aged.

It appears certain to be a major issue in this year's campaigning for the White House and Congress, regardless of what Congress does in the field before adjourning this summer.

Both the Democrats and the Republicans are supporting costly, sweeping plans which differ on the basic approach. The major Democratic plans call for use of the Social Security System. The Republican proposals would have the Federal government and the states put up hundreds of millions of dollars to help the aged buy health insurance on a voluntary basis.

The medical profession and allied groups oppose these political solutions because, among many other important reasons, they actually would not meet the problems of many aged who need help in financing the cost of illness.

Meanwhile, a key Democrat—Rep. Burr Harrison of Virginia—warned Congress against acting on such legislation in this year of a national election. He predicted that if any such legislation should be ap-

proved this year, it "would be certain to be a monstrosity."

Noting that various solutions had been proposed, Harrison said:

"The only features which these proposals have in common are that they are all tremendously expensive; they all propose revolutionary change, and they are all complicated, uncertainly-based and little-understood by the prospective beneficiaries."

Harrison, who is a member of the House Ways and Means Committee which handles such legislation, urged that Congress defer action until next year. He recommended that, in the meantime, the Ways and Means Committee "conduct an exhaustive study of the various proposals."

In early May, the Eisenhower Administration unveiled a Federal-state, \$1.2 billion-a-year plan to help the aged with limited incomes buy broad medical and hospital insurance coverage. Under the plan, an aged person—if able financially—would bear part of the cost of both the insurance and of the medical care and hospitalization.

Arthur S. Flemming, Secretary of Health, Education and Welfare, and Vice President Richard M. Nixon stressed that participation by the aged in the Administration program would be on a voluntary basis.

The Administration's plan immediately ran into widespread opposition. Dr. Louis M. Orr, Orlando, Fla., President of the American Medical Association, said it was based "on the false premise that almost all persons over 65 need health care and cannot afford it."

"This is not a fact," Dr. Orr said. "The truth is that a majority of our older people are capable of continuing a happy, healthy, and, in many cases, productive life. Of the more than 15 million persons in the nation over 65 years of age, only 15 per cent are on old-age assistance."

Dr. Orr said neither the Administration's proposal nor the Forand-type Social Security approach is tailored to meet the problems of the undetermined number of older persons who, "although able to finance other costs, find it difficult to

withstand the additional burden of the cost of illness."

Dr. Orr advocated the AMA's positive eight-point program for the health care of the aged as a "sensible, economical" plan that would preserve freedom as well as promote security. If both these objectives are to be realized, Dr. Orr said, health care programs for the aged "must necessarily be limited to support for the needy aged and leave to voluntary, competitive, private enterprise, those activities needed to improve the health care of the rest."

In brief, the AMA program comprises: 1) improved preventative medical care for the aged; 2) a state-administered program of Federal grants-in-aid to states for liberalization of existing old-age assistance programs so that the near-needy could be given health care without having to meet the present rigid requirements for indigency; 3) better nursing home facilities for the long-term care of aged persons, especially those over age 75; 4) rapid development of health insurance and prepayment policies to provide long-term nursing home care;

5) Expansion of home nursing care services; 6) elimination of compulsory retirement and a basic change in the attitude that a person who reaches 65 has suddenly become non-productive and senescent; 7) health education to instill a "will to live" in older persons and to make them aware of the need for continuing healthful nutrition; and 8) anti-inflationary curbs to maintain the purchasing power of fixed pension and annuity benefits.

A Republican lawmaker, Sen. Barry Goldwater of Arizona, denounced the Administration's plan as "socialized medicine" and a "dime store new deal." The outspoken conservative predicted its ultimate cost would be "staggering." He said the Administration could have done better by proposing "full deductions for taxes for any amount spent for medical care of anyone" and for full costs of health plans by either an individual or corporation.

In endorsing the Administration's plan, Vice President Nixon charged the Forand-type proposals backed widely by Democrats would "open the door for socialized medicine." He said:

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"The Forand bill and similar plans would set up a great state program which inevitably would head in the direction of herding the ill and elderly into institutions whether they desired this or not. Such a state program would threaten the high standards of American medicine."

Sen. Pat McNamara (D., Mich.), Chairman of the Senate Subcommittee on Problems of the Aged, headed a group of 16 Senate Democrats who sponsored legislation that would provide hospitalization and medical care for virtually all the nation's older persons.

The co-sponsors included three avowed candidates for the Democratic nomination for president — Sens. Hubert H. Humphrey (Minn.), John F. Kennedy (Mass.) and Stuart Symington (Mo.).

Cost of the McNamara legislation was estimated at \$1,578,000,000 a year. This would be financed by a one-quarter per cent increase in the Social Security tax and 370 million dollars from general tax money.

Aviation Examination by Designated Examiners

Effective June 15, 1960, the Federal Aviation Agency will require that student and private pilots be given their medical examinations by designated medical examiners. This rule reinstates a practice which was in effect from 1926 until 1945.

In announcing the reestablishment of this practice, Dr. James L. Goddard, the Civil Air Surgeon, has emphasized his previous statements that any physician may be considered eligible for designation as an examiner.

His statement, made public February 11, 1960, follows:

In order to have a better understanding of the proposed rule, I wish to point out that it is designed to accomplish the following needed improvements in the administration of the Agency's medical certification program.

1. To maintain a group of medical examiners who are clearly responsive to the needs of public safety in the performance of examinations and the issuance of medical certificates to airmen.
2. To permit the administration of training programs to maintain the

quality of performance of medical examiners and to permit the dissemination of special instructions pertaining to the needs of civil aviation.

3. To bring into the program those physicians who have the professional qualifications and a demonstrated interest in the medical certification field.
4. This would permit the designation of any qualified physician who, by his application, has demonstrated interest in the program.

Those physicians in localities where flying activities are conducted may wish to consider filing an application for designation by writing to the Civil Air Surgeon, Federal Aviation Agency, Washington 25, D. C.

Designation as an aviation medical examiner will qualify the designee to examine both Class II (commercial) and Class III (student and private) airmen, including control tower operators. Instructions concerning the required procedures, standards, and equipment will be supplied to those who apply.

Since commercial and airline transport pilots have always been required to obtain examinations from specifically selected physicians, there are presently some 2,000 aviation medical examiners previously designated and located throughout the country. Expanding aviation activities will result in a continuing need for additional examiners. There are at present some 400,000 active civil airmen of whom approximately 240,000 are examined each year.

ANNOUNCEMENTS

The Tennessee Valley Medical Assembly will meet at Read House, Chattanooga, Tennessee, September 26-27, 1960. Dr. Robert A. Waters, 109 Medical Arts Building, Chattanooga, Chairman.

An invitation is extended to all members of the Arkansas Medical Society to attend the next General Assembly of The World Medical Association, which will be held in West Berlin, Germany, Septem-

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ber 15-22, 1960. For further information write to The World Medical Association, 10 Columbus Circle, New York 19, N. Y.

The Department of Otolaryngology, University of Illinois College of Medicine, will conduct a postgraduate course in Laryngology and Bronchoesophagology from October 17 through October 29, 1960, under the direction of Paul H. Holinger, M.D.

Registration will be limited to fifteen physicians who will receive instruction by means of animal demonstrations and practice in bronchoscopy and esophagoscopy, diagnostic and surgical clinics, as well as didactic lectures.

Interested registrants will please write directly to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois.

New Members . . .

Dr. Arthur Moore has been accepted for membership in the Washington County Medical Society. His preliminary education was obtained at the University of Arkansas. He was graduated from the University of Arkansas School of Medicine in 1954. He served internship at the Crawford Long Hospital in Atlanta, Georgia, from 1954 to 1955; he then served residency until 1958 at the University of Arkansas School of Medicine. From 1958 to 1959 he was an instructor at the University of Arkansas School of Medicine. Dr. Moore is an internist with his office at 675 Lollar Lane in Fayetteville.

Dr. Charles T. Edmondson is a new member of the Washington County Medical Society. He is a native of Locust Grove, Arkansas, and received his preliminary education at the Arkansas College in Batesville from which he received a B.S. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1952. He practiced

from 1952 to 1953 at Huntsville, Arkansas, and from 1953 to 1959 at Malden, Missouri. Dr. Edmondson's office is at 135 East Emma in Springdale.

Dr. Vea J. Riegler is a new member of the Pulaski County Medical Society. She is a native of Kansas City, Kansas, and received her preliminary education from the Jr. College in Little Rock. She was graduated from the University of Arkansas School of Medicine in 1943. Dr. Riegler has practiced for the past 10 years at Buffalo, New York. She is an anesthesiologist with her office at 7108 Rockwood Road in Little Rock.

A new member of the Pulaski County Medical Society is **Dr. Melvin Shatavsky**. He is a native of Chicago, Illinois, and received his preliminary education at the University of Wisconsin in which he received a B.S. degree. His M.D. degree was obtained from the University of Illinois College of Medicine in 1957. Before moving to Little Rock Dr. Shatavsky was with the Salem Clinic in Salem, Arkansas. He is now with the V.A. Hospital in Little Rock.

Dr. Hayden H. Donahue is a new member of the Pulaski County Medical Society. He is a native of El Reno, Oklahoma and received his preliminary education at Lawrence, Kansas in which he received a B.S. degree. His M.D. degree was obtained in 1941 at the University of Kansas School of Medicine. He has practiced at his present location for the past 4 months. Before moving to Little Rock he practiced in Oklahoma and Texas. Dr. Donahue is a Neuropsychiatrist at the Arkansas State Hospital in Little Rock.

A new member of the Pulaski County Medical Society is **Dr. Rosemary Coffelt**. She is a native of Conway, Arkansas and received her preliminary education at Arkansas State Teachers College from which she received a B.A. degree. Her M.D. degree was obtained at the University of Arkansas School of Medicine in 1957. Dr. Coffelt practiced for 7 months at the University of Missouri before moving to 216 West Poplar in Jacksonville, Arkansas.

Obituary

Dr. G. E. Mullins of Emerson died at his home March 27 after a long illness. He had practiced medicine for 53 years. He is survived by his widow, two sons and four daughters. Funeral services were held at the Methodist Church in Emerson and burial was in Magnolia Memorial Park.

Personal and News Items

A number of friends honored Dr. Ben Pupsta of Clarendon on Doctor's Day with a surprise buffet supper. He was presented with a beautiful 23 jewel self-winding Bulova wrist watch.

Dr. C. G. Swingle of Marked Tree, who is active in various civic and church groups, was recently elected president of the Marked Tree Lions Club.

Dr. Charles H. Stinnett, doing internship at University Hospital, and who is a graduate of the University of Arkansas' School of Medicine, recently received a scholarship from Mead Johnson and Company. Another Arkansan who received an award from the same company is Dr. Joe T. Diffie of Little Rock. The awards were presented by the American Academy of General Practice at its 12th annual scientific assembly in Philadelphia.

At the April meeting of the Pulaski County Mental Health Association, a plaque was presented to Dr. Granville L. Jones for his "outstanding and inspirational service in the field of mental health."

Prizes in the National High School Essay Contest sponsored by the Association of American Physicians and Surgeons were awarded by Dr. Larry Siegel, president of the Washington County Medical Society. David Durham of Fayetteville, son of Dr. and Mrs. Sam Durham,

won first prize for his essay on the advantages of the American free enterprise system.

Newly elected officers of the Brinkley Country Club include Dr. Pat Harrison, president, and Dr. J. P. Williams, secretary-treasurer.

Dr. Wendell Gordon opened his office in Paragould in April. Dr. Gordon interned at St. Joseph's Hospital, Memphis, and is a graduate of the University of Tennessee Medical School. He did his pre-med work at Murray State.

Mr. Paul Schaefer, executive secretary of the Arkansas Medical Society, was given an associate membership in the Southern Medical Association for "meritorious service to the medical profession or to humanity by a layman."

Dr. Richard V. Ebert was re-elected president of the Pulaski County Tuberculosis Association at the 41st annual meeting in Little Rock. Dr. John E. Greutter Jr. was elected 2nd vice president.

A "country doctor who practices in the city," is Dr. George D. Thompson of Little Rock, who recently celebrated his 77th birthday. He has practiced medicine for 49 years, and is still active.

Dr. and Mrs. Charles B. Beeby of Huntsville were injured in an automobile accident near Pine Bluff when enroute to the State Medical Society meeting. Dr. Beeby suffered a broken arm and facial lacerations. Mrs. Beeby received multiple bruises and facial lacerations.

Dr. Oliver Wallace has been re-elected president of the Carroll County Medical Society. Dr. W. A. Redman of Eureka Springs was re-elected secretary-treasurer.

Dr. Wendell Garden, who recently opened his offices in Paragould, has been added to the staff at the Community Methodist Hospital, Paragould.

Dr. H. W. Keisker, specialist in chest surgery, has opened his offices in Jonesboro. Dr. Keisker is a graduate of South-

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western University and received his medical degree from the University of Tennessee Medical School, Memphis.

One of the few old-time country doctors practicing is Dr. M. C. Richardson of Corning. He has practiced medicine in the Corning trade area for over half a century.

The new \$7 million Jefferson Hospital in Pine Bluff was dedicated during the meeting of the Arkansas Medical Society. Senator J. William Fulbright delivered the dedicatory address.

Dr. and Mrs. George L. Hardgraves of Clarksville celebrated their Golden Wedding Anniversary on June 19, 1960. Dr. Hardgraves graduated from the University of Arkansas School of Medicine in 1911 and has practiced in Johnson County for the past forty-nine years. He is a member of A.M.A., Johnson County Medical Society, Staff member of the Clarksville Hospital and past Chief of Staff.

Dr. R. B. Robins of Camden spoke to the Southwestern Shoe Convention in Dallas, Texas in May, using as his subject "Keep Your Feet on the Ground." The following day he spoke to the New Mexico Medical Society in Albuquerque, New Mexico, on "A New Look at Medical Practice."

On June 30, 1960 Dr. Arthur Mansfield Washburn retired from his duties as a State Health Officer after spending thirty-three years serving the people of Arkansas in the control of communicable diseases. He was born in Burlington, Iowa and received his education in the schools of Burlington, attended the University of Iowa and graduated from the University of Chicago, Rush Medical College of Chicago, and Harvard School of Public Health, Boston. He began private practice in Chicago, in 1920, going into industrial medicine. In 1926 he entered public health work in New Mexico, and came to Arkansas in 1927 as Medical Director in Mississippi County. He advanced to his position as Director of the Division of Communicable Disease Control of the State Health Department in

1937. Dr. Washburn holds an Associate Professorship in the Department of Medicine of the University of Arkansas School of Medicine. He is a Diplomate of the American Board of Preventive Medicine and Public Health, having been elected to the Founders' Group of that Board, and is a Fellow of the American College of Preventive Medicine. He is a member of the Board of the First Christian Church, a York Rite Mason and a member of the Shrine. His professional affiliations are the Pulaski County Medical Society, Arkansas State Medical Society, American Medical Association, Arkansas Public Health Association, and a Fellow of the American Public Health Association. Dr. Washburn served in the Medical Corps in both World Wars, holding the rank of Colonel at the time of his retirement in 1950. He was awarded the Bronze Star Medal "for meritorious service in preventive medicine" during World War II.

Dr. Lee A. Dean of Rogers was elected to the board of directors of the Arkansas Tuberculosis Association at its annual meeting April 21 in Little Rock. Now president of the Benton County TB Association, Dr. Dean will help to form the program necessary for the proper expenditure of Christmas Seal funds for the state association.

The members of the Arkansas Medical Society are invited to attend the next General Assembly of The World Medical Association to be held in West Berlin, Germany, September 15-22, 1960. This invitation is extended through Dr. R. B. Robins of Camden, who is Chairman of the Arkansas Section of the United States Committee of the World Medical Association. The World Medical Association was organized in 1947, and is an organization of the national medical associations of the free world. It is the only spokesman before other international bodies.

Dr. Edward J. Novak, Tuckerman physician, has accepted a post at the VA Hospital on the University of Colorado campus and will assume his new duties in July. He will take specialized training in Physical Medicine and Rehabilitation in his new position.

Dr. Mike Shatavsky, who has been spending only the weekends practicing surgery at the Van Buren County Memorial Hospital, has now begun full time practice at that place. Dr. Shatavsky is a native of Chicago, was educated at the University of Wisconsin and the University of Illinois, and has been practicing medicine in Arkansas about one year.

Dr. Ben Saltzman of Mountain Home was guest speaker at the Bingen RCI in May.

Proceedings of Societies

At the May meeting of the Craighead-Poinsett Medical Society, Dr. Herman D. Alston of Jonesboro, spoke on "The Treatment of Fungus Infections with Antibiotics."

Contributors to the American Medical Education Foundation from the State of Arkansas during March 1960:

Edwin F. Gray, Little Rock\$100.00

Book Reviews

HANDBOOK OF POISONING: DIAGNOSIS AND TREATMENT. Robert H. Dreisbach, M.D., Ph.D., Professor of Pharmacology, Stanford University School of Medicine. Second Edition. Pp. 474, illustrated, 1959. Lange Medical Publications, Los Altos, California.

With the advances in our knowledge of chemistry and new organic and inorganic substances, the average person is exposed to many hazards; these may be in the form of injections, inhalents or contacts. This has resulted in difficult diagnosis problems in some cases of poisoning, and has certainly complicated the problem of therapeutics. Every physician should be in a position to diagnose and treat cases of poisoning. Dr. Dreisbach's Handbook of Poisoning is very good. It discusses the common chemical poisons. There are even discussions of poisonous fishes, insects, snake bites, and etc. The book is written in outline form and has an excellent index. It is heartily recommended to the medical student and to all practicing physicians. AKJ

SYNOPSIS OF TREATMENT OF ANORECTAL DISEASES, by Stuart T. Ross, M.D., F.A.C.S., F.I.C.S., Diplomate of the American Board of Proctology; Secretary of the American Board of Proctology; Fellow and Past President of the American Proctologic Society; Fellow of the New York Proctologic Society; Fellow of the Pennsylvania Proctologic Society; Honorary Fellow of the New Jersey Proctologic Society; Corresponding Member of Sociedad Brasileira de Proctologia. Illustrated, Pp. 240, 1959. The C. V. Mosby Company, St. Louis, Mo.

This book of 240 pages is a reasonably complete synopsis of diseases of the anus and rectum. It is not complete enough to be used as a textbook. Its small size would enable it to be used as a teaching outline by medical students. This reviewer is not aware of other handbooks in this field. This one is recommended to medical students as being written by competent authority and covering anorectal diseases briefly but adequately. AKJ

PAIN AND ITCH NERVOUS MECHANISMS.

Editors for the Ciba Foundation G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P. and Maeve O'Connor, B.A. 120 Pp., 1959, Illustrated, Little, Brown and Company, Boston.

This is a symposium of principal interest to the neurologists and physiologists. It is highly recommended for those interested in this field but is not recommended to the practicing physician. AKJ

Woman's Auxiliary

The Woman's Auxiliary to the Garland County Medical Society met at the home of Mrs. John Dodson for the April business meeting and a fashion show. Hostesses for the meeting were Mrs. Dodson, Mrs. Tom Durham, Mrs. Richard Graham, Mrs. Charles Yohe, Mrs. O. A. Smith and Mrs. Harvey R. Livesay.

* * *

Mrs. John Chenault of Decatur, Alabama, president of the Southern Medical Association Auxiliary, was the featured speaker at the annual convention of the Arkansas Medical Association Woman's Auxiliary held in Pine Bluff. Another official guest at the convention was Mrs. Frank Gastineau of Indianapolis, Indiana, who spoke at the first business meeting of the convention.

* * *

New officers of the State Auxiliary who were installed during the April meeting in Pine Bluff are as follows: Mrs. C. C.

Long, Jr. of Ozark, president; Mrs. Hershel Wilmoth of Glenwood, president-elect; Mrs. Porter Rodgers, Searcy, 1st vice-president; Mrs. Erner Jones, Little Rock, 2nd vice-president; Mrs. Peter Trinka of El Dorado, 3rd vice-president; Mrs. William Breit, Harrison, 4th vice-president; Mrs. L. A. Whittaker, Jr. of Ft. Smith, recording secretary; and Mrs. W. G. Cooper, Little Rock, treasurer.

* * *

The Woman's Auxiliary to the Arkansas Medical Society became the first organization to contribute to the Medical Education Foundation for Arkansas when, at its meeting in Pine Bluff on April 19th, it was voted to contribute \$50.00 to the Foundation in honor of Dr. James M. Kolb.

FIFTY YEAR CLUB OF AMERICAN MEDICINE

The name of American Medicine should strike a responsive chord and create a touch of pride not only in the minds of the ones who are eligible for this club but also every doctor in America, as no other nation can boast as good.

Therefore I desire and ask all doctors to join forces and let's have a club that will be the admiration of not only doctors in Arkansas but of all in the United States.

The Club needs some financial support to organize, so am asking doctors of Arkansas to send a dollar or so to the Citizens Bank of Jonesboro, Arkansas to deposit for the Fifty Year Club of American Medicine to be used for expenses for the Club only. Thank you.

Most appreciative,
J. H. McCurry

Fifty Year Club of American Medicine

This Club is being organized as a social function to honor physicians who have been in the practice of medicine fifty years or more, who have gone before and shown the way, that their efforts have not gone completely unnoticed.

The first meeting and organization is to be held in Washington, D.C. at the Clinical Meeting of the AMA around the 30th of November.

This organization is to be completely autonomous and independent officially of the AMA, yet has the blessings of the AMA. The AMA takes no official responsibility for it as an organization.

There will be a room set aside at each Clinical Meeting of the AMA for members to meet, "bat

the ball around", "chew the rag", discuss things that have transpired and new ones that may arrive. We will have a Dutch treat as a luncheon or breakfast as may be determined at each meeting.

There will be no dues, but a fee of about \$2.00 to finance paying for lapel buttons, Appreciation certificates, postage, etc.; thus making the organization self supporting. It is up to the members as to the usefulness, benefits, and procedures to make it worthwhile.

If interested, please sign and return to Organizer:

DR. J. H. McCURRY,
CASH, ARKANSAS

I desire to become a member of the FIFTY YEAR CLUB of American Medicine.

I have been in the practice of medicine since

Dr. _____

Street Address _____

City _____, State _____

(Please Print)

LETTERS TO THE EDITOR

May 12, 1960

Dr. Eugene Crawley
5514 West Markham
Little Rock, Arkansas

Dear Dr. Crawley:

I was very unhappy to receive your letter of May 9. I am very sorry that the medical problem which you have, calls for a limitation of activities on your part, but by the same token I urge you to take every care possible to try to insure your own good health.

The service which you have rendered to the children and the people of the state of Arkansas has been a wonderful inspiration to me, and although posterity may soon lose both of us in its wheel of events, the tracks of your efforts will be seen over the entire state. May I take this opportunity of thanking you personally, and on behalf of the children on our program, and the staff of our department, professional and otherwise, I would like to pass on this letter as a monument to a job well done. If more of the doctors of the state of Arkansas gave of themselves as you have done, the threat of government interference in our private lives would be much less severe than it is.

I am taking the liberty of sending a copy of this letter to Paul Schaefer, of the State Medical Society, as a testimonial to your efforts, and the medical profession

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which you represent, and I feel that the entire state body should be made aware of this contribution.

With kindest personal regards and best wishes,

Sincerely yours,
Ellery C. Gay, D.D.S., M. D.
Medical Director
Crippled Children's Division

ECG:nwe

cc to Mr. Paul Schaefer

Answer to What Is Your Diagnosis?

SKULL — EOSINOPHILIC GRANULOMA

This 39 year old white female, sixteen months prior to admission, noticed a burning, stinging sensation in left temporal region radiating into her occiput. She had noticed some photophobia of late and decrease in visual acuity for one year. On physical examination the only unusual findings were generalized mild lymphadenopathy with nodes up to $\frac{1}{2}$ cm. in axilla but not hard or fixed.

Laboratory data revealed Hgb to be 13.84 and white count 5,700.

On April 11, 1957, a skull biopsy was done and reported as eosinophilic granuloma.

Films revealed a lytic defect in the left frontal bone typical of eosinophilic granuloma. The patient was given x-ray therapy.

CONTRIBUTORS TO THE AMERICAN MEDICAL EDUCATION FOUNDATION, APRIL 1960

Curry B. Bradburn, Jr., Little Rock	\$ 10.00
Austin Doren, Smackover	15.00
Milton D. Deneke, West Memphis	25.00
Austin Doren, Smackover	49.87
L. G. Fincher, Sr., El Dorado	8.00
Anthony M. Grasse, Calico Rock	25.00
Warren S. Riley, El Dorado	12.00
Robert M. Stanton, Little Rock	13.50
V. T. Webb, Little Rock	10.00
David M. Yocum, El Dorado	15.00

Woman's Auxiliary to the	
Arkansas Medical Society	100.00
Boone County Medical Society	5.00
Bowie-Miller County Medical Society	25.00
Clark County Medical Society	75.00
Garland County Medical Society	19.00
Independence County Medical Society	18.00
Jefferson County Medical Society	10.00
Phillips County Medical Society	5.00
Pulaski County Medical Society	205.00
Sebastian County Medical Society	75.00
Sevier County Medical Society	10.00
Union County Medical Society	12.00
Union County Medical Society	20.00
Washington County Medical Society	5.00
White County Medical Society	5.00
Mrs. F. C. Atkinson, Hot Springs	7.50
Mrs. J. C. Baber, Little Rock	64.20
Mrs. Kenneth R. Duzan, El Dorado	11.25
Mrs. Guy Farris, Little Rock	12.00
Mrs. Paul Gray, Batesville	30.00
Mrs. M. C. Hawkins, Jr., Searcy	7.50
Mrs. James M. Kolb, Clarksville	1.88
Mrs. Mason Lawson, Little Rock	7.50
M. B. Livesay, Hot Springs	3.75
Mrs. W. L. Newton, Smackover	2.62
Mrs. Frank Padberg, Little Rock	6.75
Mrs. W. S. Rainwater, El Dorado	3.75
Mrs. Peter Trinca, El Dorado	7.50
Mrs. Wendall Ward, Fayetteville	1.88
Mrs. J. Wright, Hot Springs	7.50

\$947.95

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Abdominal Trauma

JAMES M. STOKES, M.D.*

The management of abdominal trauma may be conveniently discussed in two categories — wounds which penetrate the abdominal wall, and those which injure without evidence of a perforating wound. The first group of injuries, the penetrating wound, demands prompt surgical exploration to determine the extent of damage to accomplish immediate repair. Exploration should never be postponed on the basis of the presumed direction of the missile or other physical evidence which might imply the peritoneal cavity had not been entered. Probing is dangerous and only delays correct treatment. After adequate preoperative supportive measures an exploration of the peritoneal cavity should be performed at once.

The closed abdominal injuries present the most difficult problem in diagnosis and treatment since exploration is not indicated by the primary nature of the wound and for this reason the remainder of the discussion will concern itself with this group of patients. Closed injuries vary from 28 to 86 percent in reported series (1) (2). That their seriousness belies the absence of external damage is attested to by mortality rates of 13 to 19 percent of the total patients (3). The likelihood that most of the intraabdominal injuries are remediable if treated early and adequately offers an unusual opportunity in surgical treatment. As the two car family becomes a reality their numbers may assume the epidemic proportions of battle field casualties.

The viscera most commonly involved in nonpenetrating wounds of the abdomen are the spleen, kidneys, liver, and intes-

tines. *Less frequently — the diaphragm, pancreas, and stomach are injured.* The distribution of wounds in blunt and penetrating trauma of 273 patients is shown in Table I (not included here). This series of patients was reported from the St. Louis City Hospital by Starkloff (4) and covers a ten year period from 1942-1952. It is apparent that penetrating wounds predominantly involve the viscera with the largest volume while non-penetrating trauma affects the solid viscera in greater numbers. The liver, vulnerable by its volume and solid structure, is high in frequency of injury in both series. (*The genitourinary injuries will be discussed by Dr. Nicolai.*)

Rupture of the spleen and liver are most frequently responsible for massive blood loss in patients with closed abdominal trauma. Both are solid viscera with relatively fixed positions and may be injured by direct force from a blunt object or by sudden deceleration forces.

The spleen is particularly susceptible to fracture and rupture of the spleen after apparently insignificant injury is not unusual. In children there may be no history of trauma beyond that of normal play activity.

In adults splenic hemorrhage may be immediate or delayed of bleeding (it) may cease only to recur with catastrophic suddenness as the patient becomes ambulatory after treatment for other injuries. Delayed bleeding has been observed 20 to 30 days after the initial injury.

The characteristic tenderness in the left upper quadrant, left shoulder pain, and evidence of blood loss are well known indications for exploration. In some pa-

*From the Department of Surgery, Washington University School of Medicine, St. Louis, Missouri.

tients, however, the association of fractured ribs, the presence of local injury to the abdominal wall or the absence of any localizing signs may obscure the diagnosis. Peritoneal aspiration when positive may provide early evidence of bleeding in some patients but a negative result is of no value in excluding splenic rupture. A large amount of blood can be walled off between the diaphragm and stomach which cannot be reached by paracentesis. Fig. I (not included here) illustrates displacement of the stomach by a large hematoma associated with splenic fracture. When splenic rupture is considered, blood should be prepared immediately for transfusion even though the vital signs of the patient are stable.

Exploratory laparotomy is indicated if there is evidence of bleeding by change in the clinical status of the patient or if repeated examination of the blood indicates continued blood loss. Infusion of large volumes of intravenous fluid may maintain the blood pressure in the presence of continued slow hemorrhage. For this reason serial blood studies are valuable.

In the presence of obvious splenic rupture, exploratory laparotomy should be performed immediately while transfusions are administered under pressure if necessary. After control of the splenic pedicle the procedure may be interrupted until reasonable blood pressure is restored. Auto transfusion is rarely used but may be necessary if adequate blood is not otherwise available.

The operative site should be closely inspected to see if vessels of the diaphragmatic ligament or splenic pedicle are bleeding after blood pressure has returned toward normal since they may not be apparent during hypotension.

Recovery is usual if bleeding is controlled before irreversible shock has developed.

LIVER

The liver is injured often in both penetrating and blunt trauma because it occupies a large volume of the abdomen and therefore likely to be struck by missiles and because it is a solid organ, it is subject to fracture by direct force. The mortality and morbidity of liver injury was extremely high before the availability of blood and antibiotics and Mikesky reports

many series in which it approached 50 to 60 percent. The liver is highly vascular and hemorrhage is common. In a series of 300 liver injuries hemorrhage was the most common cause of death (5). In addition, disruption of bile ducts may result in bile peritonitis and in some patients the injury affords an avenue (pathway) for the entrance of blood into the biliary tree resulting in hepatobilia. Abscesses and biliary fistula are reported after operation.

The diagnosis of liver rupture may be clear from the location of tenderness and evidence of blood loss. In some patients, however, liver injury may not be apparent clinically for several days after injury when bleeding or fever and abscess formation become apparent. Rarely gastrointestinal bleeding is the first sign of hematomobilia, secondary to liver trauma (6). Laparotomy is indicated if bleeding continues and if evidence of peritonitis or abscess develops. Lacerations of the dome of the right lobe may be easily overlooked in exploration of the abdomen and delayed hemorrhage from such a wound was responsible for one death after laparotomy at St. Louis City Hospital. If no other apparent source of bleeding is found, the dome should be palpated and visualized by extension of the incision into the thorax if necessary.

Severe injuries of the left lobe can be successfully treated by lobectomy. Deep laceration may necessitate packing to control severe hemorrhage. These packs should be removed (between the 4th and the 7th day) only in the operating room. Suture of the liver is frequently attempted but is frequently unsuccessful in control of severe hemorrhage. In a recent case suture of the liver was followed by a collection of blood in the liver wound and drainage into the biliary ducts, filling the gall bladder. If hepatobilia is present, a T-tube may be used and accompanied by drainage of the liver wound.

INTESTINE

Rupture of the intestine follows blunt trauma with sufficient frequency to justify a high index of suspicion in patients with closed abdominal injury and ileus. Perforation occurs near the points of fixation in most instances; the jejunum near the ligament of Treitz, the retroperitoneal

duodenum and the terminal ileum. Other areas of injury in the free portion have been observed. Diagnosis is obscure in patients without definite evidence of peritonitis or free air in the peritoneum demonstrable by x-ray. This group, unfortunately, comprises the largest number of patients with abdominal injury. Poor bowel sounds and abdominal tenderness, and distension are so often associated with injuries of the back, abdominal wall or ribs that their differentiation from intestinal disruption is particularly difficult in the early period after injury. The rupture of retroperitoneal duodenum may not produce definite signs for 24 to 48 hours. Deterioration of the patient with abdominal tenderness and without evidence of blood loss is sufficient evidence for laparotomy. Inspection of the retroperitoneal duodenum for crepitation, hematoma, or bile staining is an important part of exploration in all cases of abdominal trauma. Splitting of the seromuscular layer without actual gross perforation of the mucosa is sometimes responsible for gradual onset of peritonitis.

INJURIES TO THE MESENTERY

Laceration of the mesenteric vessels with hematoma or free hemorrhage intraperitoneally can follow blunt trauma. Resection of the affected bowel or surgical repair of the major superior mesenteric vessels may be necessary depending upon the location and severity of the wound. If viability of involved intestine is doubtful, resection to normal bowel is necessary.

PANCREAS

The occurrence of pancreatic pseudocysts and fistula following non-penetrating abdominal trauma is not uncommon. The treatment of the acute pancreatic injury is rarer since many patients do not have laparotomy until secondary complications are recognized. The clinical picture of acute pancreatic injury is illustrated by the following brief abstracts of two patients treated at the Barnes Hospital during the past year. (1) medical student, (2) child with pancreas and spleen.

ABSTRACT OF CASES

CASE 1: D. G., a four year old boy, was admitted to the St. Louis Children's

Hospital on October 5, 1958. The parents said the child had jumped from a nightstand, striking a bedpost on the left side of the abdomen below the ribs. He lay on the floor and became very pale, complaining of pain in the abdomen. The child was put to bed and forty-five minutes later he vomited, after which he was brought to the hospital. Examination: Temperature 38.2, pulse 124, respiration 22. The child did not seem to be in acute pain at the time of the examination. The abdomen was slightly distended, soft, with tenderness to palpation in the left upper quadrant and left flank. Bowel sounds were slightly hyperactive. The white blood count was 20,000, the hematocrit 38 percent, and the serum amylase 800 units. X-rays of the abdomen did not show free air. The child did not complain of pain during the first twelve hours after admission, but on the following day his tenderness to palpation increased and there was greater muscle spasm in the left upper quadrant. The pulse rate continued to be rapid. Exploratory laparotomy was performed on October 6. At operation examination of the lesser omental sac showed a fracture of the midportion of the body of the pancreas and a rupture of the splenic artery with a large retroperitoneal hematoma. Splenectomy and removal of the tail of the pancreas was performed, with ligature of the distal portion of the pancreatic duct and drainage of the bed of the pancreas. The child had an uncomplicated postoperative convalescence and was discharged on the eleventh hospital day.

CASE 2: N. O., a twenty-five year old female medical student, was admitted to the emergency room approximately two hours after she was injured in her automobile while parking it. The patient stated she was thrown against the steering wheel and complained of pain in the epigastrium which was worse when lying down, and somewhat relieved by flexing the thighs upon the abdomen. Examination: blood pressure 90/60, pulse 88, respiration 20, temperature 37.2. The abdomen was soft, flat, and bowel sounds were normal. There was moderate tenderness in the epigastrium without evidence of a mass. She continued to feel nauseated during the next eight hours

after admission and the next morning the patient vomited twice and complained of increasing tenderness. Upon re-examination of the abdomen, tenderness to palpation was increased and there was more pronounced spasm of the muscle to palpation. Exploration of the abdomen was performed immediately. The pancreas was ruptured in the head overlying the portal vein and exposing the portal vein and common bile duct. A hematoma was present between the separated portions of the pancreas and extending into the porta hepatis and into the retroperitoneal tissues and lesser omental sac. The blood clots were evacuated; the pancreatic duct was ligated at the point of its transection, and some drains were placed in the pancreatic bed. The drains were removed during the postoperative period and the patient had an uncomplicated convalescence.

She was readmitted in January of 1959, with a recurrence of acute epigastric pain, nausea and vomiting following a meal of fried pork. The abdomen was tender to palpation of the epigastrium and no abnormal masses could be palpated. A serum amylase was obtained and reported as 580 units (normal 200 units). The patient recovered without operation and a cholecystogram showed evidence of small gallstones.

If the injury involves the tail of the pancreas, resection is preferable with suture ligation of the vessels and duct at the proximal line of resection. In injuries of the body of the pancreas hemostasis may be obtained by ligating the vessels in the pancreas. The treatment of the duct is not well established since the normal pancreatic duct is small in the absence of obstruction and anastomosis is difficult. Ligation of the torn ends of the duct will decrease the occurrence of fistula and conserve the endocrine function of the pancreas. The acinar tissue distal to duct ligation will atrophy but the exocrine function can be maintained with 20 percent or less of the pancreatic substance.

GALLBLADDER

Rupture of the gallbladder of biliary ducts is rare after nonpenetrating trauma. Drainage of the gallbladder or common duct will usually provide adequate

management unless the gallbladder is necrotic.

SUMMARY AND COMMENT

The management of penetrating wounds of the abdomen is ordinarily quite definite. An individual patient with closed abdominal trauma presents a problem in surgical judgment which is not solved by generalizations. A few principles of early management are worthy of comment. The multiplicity of wounds contributes to the difficulty in evaluating many patients. Local injury, referred pain, and reflex ileus are superimposed upon the signs of intraperitoneal injury. When ileus or the possibility of intestinal perforation exists, gastric suction is indicated immediately to prevent abdominal distention, acute gastric dilatation and the accompanying respiratory embarrassment. Morphine and similar drugs should be used sparingly until definitive diagnosis is made but every effort should be made to reduce the pain from fractured ribs by regional anesthesia. The most productive, significant attitude in the management of the patient with abdominal injuries is frequent reexamination of the patient both physically and by laboratory methods. Deterioration of vital signs, evidence of bleeding or the development of increasing abdominal tenderness warrant exploration of the abdomen in most instances, assuming there are no absolute contraindications from other injuries. It is the recognition of early changes which provide the earliest evidence of serious visceral injury.

The evaluation of closed abdominal injuries in children deserves comment. The history is frequently unreliable and in many instances absent; cites several examples of major visceral pathology without known trauma. Blood loss which might be tolerated well by an adult may represent a considerable fraction of the circulatory volume in a child. Any deterioration in the vital signs or increasing abdominal tenderness with leucocytosis should be cause for early exploration.

The decline in mortality rates from 44 percent during the period 1900-1930 (6) (Welch) to approximately 6.2 percent during 1947-1952 (5) (6), illustrates the cumulative effects of blood transfusion, improved anesthesia, antibiotics and more

aggressive surgical effort. In the series of 200 cases of abdominal trauma reported by Welch, sixteen were treated without operation. Two patients died and three had severe complications. Sixteen laparotomies were performed for diagnosis and only five had no abnormal findings.

Starkloff (5) reported one death in forty-seven negative explorations and Clarke (1) had no deaths in twelve negative explorations. The recorded mortality and morbidity from observant nonoperative treatment of closed abdominal injuries justify early exploration in any patient with evidence of bleeding or peritoneal contamination when adequate facilities for anesthesia and transfusion are available. Delay until diffuse peritonitis and shock are apparent will result in ir-

reversible changes in patients who have correctible lesions.

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The Early Management of Thoracic Trauma

CHARLES L. ROPER, M. D.*

The successful management of a patient who has sustained chest injury is for the most part dependent upon the recognition by the attending physician that a derangement in cardiorespiratory physiology exists or is impending. Thus, after prompt and accurate appraisal of the injury, definitive treatment is aimed at the correction and prevention of cardiorespiratory system imbalance which, if ignored, may result in a needless mortality. It is also imperative to remember that in cases of multiple bodily injuries, immediate measures to prevent asphyxia, which is the most common cause of death following severe trauma, must be carried out. The patient must be adequately resuscitated before other definitive therapy can be instituted.

It is not within the scope of this paper to present the detailed pathological physiology which each type of chest injury may entail. The discussion will be limited to a presentation of accepted measures in the early therapy of various types of thoracic trauma.

CHEST WALL INJURIES

These include contusions and hematomas of the chest wall soft tissues, present either singly or in combination with the several types of rib fractures.

The uncomplicated contusion or hematoma may be treated by the application of local heat and the administration of mild analgesic agent. Following any trauma to the chest wall, however, an x-ray film is mandatory to rule out the presence of concomitant rib fractures, and other complicating chest injuries. To make the diagnosis of simple chest wall contusion without this diagnostic aid is to invite surgical and/or medico-legal embarrassment.

Occasionally one may see a patient suffering from a chest wall contusion whose initial x-ray is entirely within normal limits. Twenty-four to forty-eight hours later, the patient may develop a low grade

fever and a repeat chest film taken at that time may reveal the presence of a pleural effusion. Thoracentesis will reveal a relatively clear, straw colored fluid most likely arising from irritation of the parietal pleura. Such non-hemorrhagic effusion is more commonly seen when rib fractures are present. Therapy consists of repeated thoracentesis if necessary until reaccumulation of fluid is no longer evident.

A rather rare sequela of chest wall injury is traumatic chylothorax. This entity may follow only contusion of the chest wall, but more commonly, will be found in association with fractures of the bony thorax as well as with penetrating wounds of the chest. A massive accumulation of chyle becomes apparent usually within forty-eight hours after injury. The initial treatment consists of the insertion of a dependently placed intercostal tube which is connected to a water seal drainage bottle. If this conservative management is unsuccessful, then thoracotomy with ligation of the thoracic duct is performed.

A fractured rib is the most common chest wall injury. Although this injury may be uncomplicated, one must not disregard the fact that frequently the most serious and urgent emergencies arise from the sequelae of rib fractures. It has been our policy to hospitalize for at least twenty-four hours any patient who has just sustained rib fractures even though the initial chest film shows no evidence of pneumothorax or effusion. The frequency with which these latter complications occur during the twenty-four hours after injury has been instrumental in determining this policy.

Treatment of uncomplicated rib fractures is aimed basically toward the restoration of normal respiratory movements which have been drastically decreased by pain. Two cubic centimeters of two per cent novacaine or xylocaine is injected around the intercostal nerves just posterior to the rib angles of the affected area.

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The intercostal nerve block may be repeated four or five times daily as necessary. Of course, one must always check for sensitivity to the anesthetic agent.

To disregard the painful chest with fractures and almost certain underlying pulmonary contusion may well allow the syndrome of traumatic wet lung to develop or to run an unimpeded course. This syndrome was recognized and described by Burford and associates during World War II and is now frequently recognized in many cases of thoracic trauma. They postulated that the painful chest served to trigger a somatovisceral reflex which resulted in bronchospasm and increased pulmonary secretions, these factors in turn then giving rise to atelectasis, often massive, and pneumonitis. Thus we believe that normal respiratory excursion of the chest wall, which freedom from pain will allow, is the most effective means of preventing these complications. Strapping of the chest may reduce the pain, but tends to splint the chest and decrease respiratory efficiency.

The most common complications of fractured ribs are hemothorax and/or pneumothorax. Air results, in closed injuries, from lung lacerations. Massive bleeding into the chest usually does not arise from peripherally located lacerations in the lung. The site of such bleeding is more often found in a partially severed intercostal or internal mammary artery. Less commonly it may arise from major branches of the pulmonary artery or aorta.

The treatment of hemothorax is prompt evacuation of all blood from the pleural space by thoracentesis. The sequelae of clotted hemothorax are well recognized and pulmonary decortication is necessary to free the entrapped lung. Then too, one must be cognizant of the fact that empyema may arise in forty to fifty per cent of cases in which a hemothorax is inadequately evacuated.

Following the initial thoracentesis and replacement of blood loss, the patient should be carefully followed. If severe bleeding continues for a few hours, thoracotomy is obligatory. Expert anesthesiology is a must in every thoracotomy for thoracic trauma.

In the majority of cases, severe bleeding

is not a problem and repeated thoracentesis results in pleural drying.

A traumatic pneumothorax may vary from that of minimal lung collapse to the so-called tension pneumothorax. With the latter condition, immediate evacuation of air should be carried out by means of a needle and syringe until definitive treatment can be instigated.

With a pneumothorax, rapid re-expansion of the lung is sought and is best obtained by the insertion of an intercostal tube through the second intercostal space anteriorly in the midclavicular line. An accompanying hemothorax is best managed by thoracentesis in a dependent area of the chest. The insertion of a second intercostal tube may be necessary if egress of air through one tube is not rapid enough to maintain an expanded lung.

If after twelve to twenty-four hours there is still rather profuse egress of air into the water seal drainage bottles and atelectasis of the lung persists, one should suspect that tracheal or bronchial laceration has taken place. The fact that no other evidence of injury, such as a rib fracture is present, should not deter investigation. Bronchoscopy should be performed in an attempt to visualize such an injury. This may be difficult with upper lobe lesions. If the laceration is visualized or if profuse egress of air continues, thoracotomy should be performed and the laceration closed with interrupted medium black silk sutures. Most such repairs will give excellent post operative results. In some instances, a lobe of the lung or the entire side may remain atelectatic for some days before rupture of the bronchus is diagnosed. In such cases bronchoscopy will reveal the involved bronchial lumen to be obstructed by stricture and granulation tissue arising from the site of laceration. Bronchography will also demonstrate the site of obstruction. The correction of this condition involves resection of the strictured area and end-to-end approximation of the bronchus. Rarely lobectomy is necessary to achieve a satisfactory result.

Subcutaneous emphysema is commonly found during the initial examination of the injured patient. Its presence should make one aware that a more serious disorder exists.

THE EARLY MANAGEMENT OF THORACIC TRAUMA

Mediastinal emphysema is usually present when esophageal and bronchial injuries have been sustained. It can occur with seemingly minor chest injuries. Macklin and Macklin showed conclusively that mediastinal emphysema can result from the rupture of perivascular alveoli with dissection of the air along the vessels toward the mediastinum. If mediastinal emphysema gives rise to symptoms through its compression of the tracheobronchial tree or impairment of venous return to the heart, a cervical mediastinotomy should be performed.

Fractures of the sternum without accompanying rib fractures or costochondral separation is relatively uncommon. The etiology of such an injury is usually a fall against some unyielding object. Although the sternum is commonly fractured during the so-called "steering wheel injury", in this instance it is almost invariably accompanied by concomitant rib fractures and other more serious lesions of the thorax. If no deformity or displacement of the fracture components are found, then operative intervention is probably not indicated. Localized external stabilization by means of a pressure dressing can be used in such instances. If displacement and overriding of the sternum is present, open reduction is carried out through a small transverse incision and the fracture is fixed by means of two or three interrupted stainless steel wire sutures.

Whenever a rib is fractured in two or more sites, the integrity of the rigid chest wall is disrupted, and consequently paradoxical motion of the affected area becomes apparent. If such fractures are multiple and/or bilateral with added sternal fracture complicating the picture, the dire physiological effect result in traumatic asphyxia is readily appreciated. Pneumothoraces and other intra thoracic trauma are frequent components of this type of injury and may be treated by the means previously described. If the area of paradoxical motion is small, stability of the site is maintained by means of a pressure dressing, this being the only instance in which strapping of the chest wall is advisable. Intercostal block is again essential for the control of pain. For the extensive lateral chest wall inju-

ries, stability is better accomplished by overhead traction of three to five pounds applied to either a towel clip or a wire placed about a rib in the central portion of the flail segment. For the anterior flail chest with sternal involvement, again similar traction can be applied either through one or two towel clips affixed to the sternum or through the medium of a wire passed beneath the sternum.

The management of patients with severely crushed chests demands that almost constant supervision by trained personnel be available. The integrity of the airway is best assured by the performance of a tracheostomy. This allows for a reduction in both the anatomic and physiological dead space so that respirations may be less labored. Even more important is the fact that tracheostomy allows for adequate and easy aspiration of the tracheobronchial tree at all times. As has been mentioned before, the clearing of tracheobronchial secretions is a constant problem with chest trauma, so that the performance of tracheotomy is not confined to the management of the flail chest alone. In most other instances, however, aspiration of the tracheobronchial tree can be performed by the judicious use of the endotracheal catheter, supplemented by bronchoscopy where the need arises.

In some patients with severely crushed chests, ventilatory assistance by respirators is imperative. This technique of management has been thoroughly outlined by Avery and Morsch.

Early surgical intervention for the correction of a severely crushed chest deserves special consideration. The indications for such procedures have not as yet been clearly set forth, however, as one follows the course of this type of patient, it becomes apparent that a significant number of them are left with rather severe chest wall deformity and increased dyspnea due to continuing paradox. For these reasons, earlier operative stabilization procedures are being performed. Methods of stabilization include intramedullary fixation by means of wires or bone plugs together with approximation of fragments by interrupted stainless steel wire sutures. One must once again comply with the mandate of adequate preopera-

tive resuscitation together with competent anesthesia when such procedures are contemplated.

An open wound of the chest, commonly referred to as a "sucking wound" implies that a localized portion of the entire chest wall has been lost or that a penetrating wound has occurred which allows for free communication between the pleural space and the atmosphere through the site of entrance without apparent loss of chest wall substance. This type of injury more commonly is seen in civilian practice with gun shot and stab wounds of the chest. A vaseline gauze dressing should be immediately applied to the open wound for temporary control of the pneumothorax, and if any delay is to be had, before proper debridement of the wound and closure of the pleura and chest wall musculature can be carried out, an intercostal catheter which is connected to water seal drainage should be inserted into the pleural space through an uninvolved portion of the chest wall. With debridement of the larger wounds, one may adequately evacuate any blood from the pleural space, suture lacerations in the underlying lung and remove any retained foreign body or rib fragments imbedded within the lung substance. Small open wounds should likewise be adequately debrided and air tight closure of pleura and musculature carried out. If loss of chest wall substance is great, it may be necessary to bridge the defect with tantalum gauze or a similar type prosthesis. Usually an adequate skin flap can easily be mobilized to cover the defect.

In dealing with gun shot wounds of the chest, one usually is faced with either a penetrating wound of the chest with intrathoracic retention of the missile or with a perforating wound which implies that a wound of exit also exists. Following a perforating wound, which has not been immediately lethal, management consists of measures to control the accompanying complications such as hemo-pneumothorax which have previously been outlined, and in addition the wounds of entrance and exit are debrided with secondary closure of the wounds several days later. It is not unusual to see perforating wounds of the chest in which x-ray reveals only a small area of contusion in

the lung with minimal or no pneumothorax. This statement should not be misconstrued to mean that such wounds are unimportant. A high index of suspicion regarding such injuries is important so that following an initial latent period, a more severe complication then arising or first becoming apparent is not overlooked.

Experience during World War II with penetrating wounds of the chest in which there was retention of the foreign body led to the dictum that thoracotomy should not be performed for removal of the foreign body alone but only in the presence of other well recognized indications. This applied to metallic foreign bodies whose greater diameter was 1.5 centimeters or less. Those larger than 1.5 centimeters in diameter were removed by thoracotomy seven to ten days later when the patient's general condition was stabilized, unless again, a more urgent indication was present. It is of interest to note, however, that an increasing number of cases are now being reported which deal with the long term complications of the retained foreign body, some occurring as late as twenty years following the original trauma. We are now carefully evaluating all cases of trauma with retained missiles regardless of size to see whether in some selected patients, early thoracotomy may result in a more prompt return to a normal life.

A common secondary complication which may be seen with any type of chest injury is reflex gastrointestinal tract ileus. This entity is usually mentioned casually in a discussion of thoracic injuries. We feel, however, that stress should be placed on its early recognition and prompt treatment by the insertion of a nasogastric tube. In many instances the immediate relief of marked dyspnea afforded by gastric decompression is readily apparent and often life saving.

Esophageal tears or perforations may result from crushing injuries of the chest but are more frequently caused by knife or gun shot wounds. Unfortunately, the symptomatology may be masked by those of more readily apparent injuries. The presence of mediastinal air, hematemesis, and dysphagia should make one suspect that esophageal injury has occurred. A Miokon or Lipiodol swallow should be

obtained as soon as possible. When the diagnosis has been confirmed, immediate thoracotomy should be done. Repair of the injury consists of meticulously trimming the wound edges and closing the defect with two layers of interrupted silk sutures. The mediastinal pleura which has been incised vertically is left open and regular intercostal tube drainage of the pleural space is used. An indwelling nasogastric tube put down at the time of operation is left in place for four to five days before removal. At this time, the patient is then begun on a clear liquid diet. Antibiotic coverage, of course, is essential in all cases of esophageal injury. The mortality of patients suffering from esophageal laceration which are untreated approaches on hundred per cent. Approximately one-half of these patients die within the first forty-eight hours after injury. This points out the necessity for early recognition and definitive treatment of the condition.

Thoraco-abdominal wounds may follow almost any of the previously described types of chest trauma. A ruptured spleen herniated through the diaphragm following crushing injuries of the chest with multiple rib fractures and pneumothorax is a not uncommon entity in civilian practice. Similarly, crushing injuries of the abdomen may give rise to stellate laceration of the diaphragm with herniation of abdominal components of such injuries. Penetrating gun shot and stab wounds of both chest and abdomen frequently result in the combined injury. The diagnosis of such combined injury is not always readily apparent. The thoracic component is more frequently noted and its symptomatology may mask the intra-abdominal trauma. In many cases of traumatic diaphragmatic herniation, it is not uncommon for the injury to be diagnosed several months or years later when persistent or recurrent symptoms of the organ systems involved are present.

These combined injuries should always have the benefit of immediate exploration. When the left thorax is involved, a left posterolateral thoracotomy incision is made through the bed of the subperiosteally resected eighth rib and repair of the thoracic injury is carried out. Then by adequately opening the diaphragm

most upper abdominal lesions can be adequately managed through a usual thoracotomy incision; the incision should be lengthened by transection of the costal cartilage with extension of the incision through the abdominal wall. If the right thorax is involved in the combined injury, separate thoracotomy and laparotomy incisions are preferred.

CARDIAC WOUNDS

Injury to the heart may occur with any type of chest trauma. The lesions vary from myocardial contusion sustained with crushing injuries of the anterior chest wall to those of penetrating or perforating gun shot and stab wounds. With these latter types of injury if death does not ensue almost instantaneously, roughly one-third of those surviving the initial injury will die as a consequence of their cardiac wound. The diagnosis of cardiac injury with tamponade should readily be made when one encounters a patient with a chest wound and who exhibits venous distention, a low blood pressure, a narrow pulse pressure, and muffled heart sounds by auscultation. In the critical patient diagnostic pericardiocentesis should be performed immediately if such signs are evident, because in the presence of tamponade, the removal of as little as fifteen to twenty-five cubic centimeters of blood can result in marked improvement. If the patient's condition, permits, x-ray and electrocardiogram may aid in the diagnosis. The problem of concomitant trauma such as an open pneumothorax must, of course, be dealt with in all instances. Blood loss must be replaced. Following the initial pericardiocentesis, the patient must be closely followed, and if signs of tamponade develop again rather promptly, exploration of the heart is indicated. If tamponade recurs after a more prolonged interval, the pericardiocentesis should be repeated with a subsequent period of observation before thoracotomy is deemed advisable. If these principles are followed, it will be found that most patients can be treated by nonoperative means. Cooley and his associates have reported the mortality rate to be five times greater in the operative group than in the nonoperative group. This is significant even when one allows for the fact that operation was undertaken in many instances

in the more severely wounded patient. In those cases where tamponade is not present due to communication of the pericardial sac with the pleural space, the lesion may be manifested through uncontrolled bleeding occurring in the pleural space which in itself is an indication for immediate thoracotomy.

SUMMARY

In conclusion it is apparent that in most cases of chest trauma immediate operative intervention should not be undertaken unless certain well established indications are present. These are:

1. Open chest wall wounds.
2. Continued intrathoracic bleeding.
3. Thoraco-abdominal injuries.
4. Esophageal perforations.
5. Continued rapid accumulation of intrapleural air.
6. Certain cardiac wounds which exhibit rapidly recurring tamponade.

Regardless of the type of injury, all immediate treatment of trauma is directed toward complete resuscitation of the patient. Such therapy may be relatively simple and in itself definite or it may precede the measures used to correct more extensive injuries.

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Guideposts in the Changing Scene*

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The past decade has witnessed changes in the tuberculosis scene in the United States greater than any but the most optimistic could have predicted. Tuberculosis was the 7th cause of death in the nation as a whole, whereas now it is the 14th. Last year the number of people who died of tuberculosis in the United States was only about one-fourth what it was ten years ago. Thousands of people are still getting tuberculosis every year, but last year there were 50,000 fewer new cases reported than ten years before, and in the country as a whole, there is good reason to feel, reported cases reflect more truly the number of cases actually occurring than they did in the late '40's.

In 1949, the shortage of hospital beds for tuberculosis patients was acute, and waiting periods for hospital admission of many months were not unusual. Today, while this is still true in some areas, in other places the pressing problem is a surplus of unused tuberculosis beds.

These great changes have been brought about by a combination of aggressive tuberculosis control effort and greatly improved therapy. They have had a number of effects that are not reflected in the simple statement that the United States has less tuberculosis than it used to have. One such effect is the sharpening of the differences that exist between different communities in both the tuberculosis problem and the most effective control measures. Some States have made slower progress against the disease than others; some had more to begin with and have not yet caught up. Now, however, some whole States, and many communities within the States, have in fact very little tuberculosis. Obviously control work to finish tuberculosis as a public health problem in such communities is going to need a quite different approach from the one taken by communities in which tuberculosis still has a firm hold. On the other hand, communities with a lot of tubercu-

losis cannot afford to change their control programs to match those of areas where the disease is becoming rare.

A more important requirement in this matter of tailoring the program to the present situation is taking careful stock of just where one stands—taking a look at the lay of the land in the changing scene, so to speak. Some very good markers, or guideposts, are in the national data which the States can use to compare themselves with each other and with the Nation as a whole.

In 1957, the last year for which there are complete figures, 13,324 people in the United States died of tuberculosis; 253, or about 1.9 percent, of these deaths occurred in Arkansas. That is less than one forty-eighth, and at first glance it might look fairly good. But when the fact that Arkansas has only about 1 percent of the population of the United States is considered, it looks different—it begins to look as though Arkansas had almost twice its share of the tuberculosis deaths. Another—and more usual—way of saying it is that while the TB death rate for the United States is 7.8 per 100,000 population, in Arkansas it is 14.2 per 100,000.

In most of the States, tuberculosis death rates are significantly higher in the large cities than they are in the remainder of the State. For the Nation as a whole, the death rate in cities of over 100,000 is almost twice what it is for the remainder of the State. Arkansas is an exception. It has a significantly lower death rate in its big city than in the rest of the State. This divergence from the general pattern seems to be a guidepost worth investigating.

Morbidity figures—that is, cases of the disease, rather than deaths—also tell a story. In 1957, there were 66,437 active and probably active cases of tuberculosis reported in the United States—a rate of 39 per 100,000. Arkansas reported 822 cases, or 46.2 per 100,000. These are the cases that are reported to health departments. They do not necessarily represent all the cases that are occurring in a com-

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munity. A low case rate *can* mean that there is actually little tuberculosis in a community. But obviously it can also reflect a slowing down of casefinding.

Arkansas has a tuberculosis case rate about 18 percent higher than the national average. In itself, that figure does not mean much. But when considering that the Arkansas death rate is more than 80 percent higher than the national average, there is reason to wonder whether the cases reported are actually in this instance a very good guidepost to the amount of tuberculosis in Arkansas. By and large, most of the States with low death rates have case rates 5 to 8 times higher than their death rate. Arkansas's case rate is only a little over 3 times its death rate. The general trend in the nation in the past five years has been a more rapid decline in mortality rates than in case rates. While the death rate has gone down an average of about 10 percent a year, the case rate has declined less than 6 percent a year. In Arkansas, however, the decline in death rate has been somewhat slower than in the rest of the Nation—but the case rate has declined considerably faster than in most other States. Arkansas has consistently had a higher than average proportion of tuberculosis cases first reported on death certificates, which represent cases never found until it is too late. All of these data suggest that there is more tuberculosis in Arkansas than the reported cases show. They also indicate that this State is one of those where sharp cutbacks in basic tuberculosis services cannot safely be made.

The picture is not all gloomy, however. Arkansas's tuberculosis death rate has been cut in half since 1951. This represents progress, even if the rate of decline is somewhat slower than in the country as a whole. Furthermore, the scene is no doubt changing here as elsewhere so far as methods of control are concerned. Furthermore, although early casefinding, prompt and complete follow-up to diagnosis, and treatment until health is restored are still the specifics of tuberculosis control, ways of accomplishing these are changing in terms of both the amount of tuberculosis in the community and the resources available to combat it.

For some years now, patterns of tuberculosis casefinding have been undergoing fairly drastic revamping. They are becoming more highly individual, as States or communities study their situation and cut the casefinding pattern to fit. The approach of all, however, is the selection of population groups for casefinding on the basis of the potential yield of tuberculosis cases. In its simplest terms, it is looking for cases where they are most likely to be found. National figures give some rough guides: people in the older age groups have more tuberculosis these days than do young people; non-whites have more than whites; men have more than women. In most areas, however, choice of groups for casefinding is more practical in terms of counties or neighborhoods or population groups that can be screened as whole groups, without the necessity of selecting certain age-race-sex groups from the general population. In Illinois, for instance, the State Health Department has adopted a system whereby the 25 percent of counties with the highest tuberculosis morbidity and mortality rates will be offered annual chest X-ray surveys; the next highest 25 percent of counties will be offered surveys every other year, and the remainder of the counties will be eligible for surveys every five years. Within the surveyed counties, emphasis will be given to those segments of the population known to have higher - than - average tuberculosis incidence. In stating the policy, the Illinois Division of Tuberculosis Control points out that short-term surveys in all counties in recent years have tended to result in annual X-rays for some people every year with a resulting decrease in yield. They expect the new method, which will allow for longer periods in high incidence areas, to make it possible to coax persons who have not participated in the past to have chest X-rays.

An individual community plan for casefinding can, of course, be more specific. At the request of the Baltimore City Health Department, a study was made during the past year of casefinding procedures in that city. Among the recommendations that came out of it was one that mass surveys should be directed to *areas* of the city with high incidence of

tuberculosis as determined by mortality rates, tuberculin sensitivity rates, or the yield of previous surveys. Priority was suggested for those neighborhoods in which previous surveys had uncovered a higher rate of cases per X-ray taken than the average for the city as a whole. Another recommendation was that such *groups* of persons as employees of industries or secondary school children should be surveyed if the yield could be expected to be more than one case per 1,000 persons screened. Other important recommendations were that the Health Department increase its efforts to see that all contacts of newly discovered cases are examined, and that they cooperate with general hospitals, chronic care facilities, and other city institutions to provide routine admission examinations for tuberculosis. Here was a plan for a city to sort out its areas and population groups, so that greater concentration could be placed on those where tuberculosis is most prevalent.

Both the Illinois plan and the Baltimore recommendations made a particular point of the necessity for complete follow-up of results of any screening activity. The Illinois statement says clearly that surveys will not be planned "until adequate provisions have been made for completing the epidemiological and clinical work which must be done to realize the end product of a survey program." In Baltimore the recommendations included one for the strengthening of diagnostic clinics and another for the inclusion of 14 x 17 diagnostic films for all screening suspects, as a part of survey procedure. These are critical aspects of tuberculosis casefinding. Screening does not find all cases unless *all* the people in the population group tested whose films show suspicious shadows are followed up until either a diagnosis is established or the possibility of disease has been ruled out.

Until fairly recently, there was often some resistance to tuberculosis casefinding on the basis that if all the cases were found, there would not be enough hospital beds to take care of them. The answer to this has always been that, from the point of view of both the spread of tuberculosis in the community and the recovery of the individual patient, it is better to

know who has tuberculosis, even if ideal treatment facilities are not available to him. It is the person with unrecognized tuberculosis who is most likely to pass the infection on to his family and close associates—and furthermore, he will not receive even minimum treatment for his disease. With the kind of therapy now available, many patients can receive active treatment outside the hospital, and although their care may be far from the ideal, a great number of them improve under it, and many recover entirely without hospitalization.

A good example of doing the best with what is at hand in treatment is the accomplishments in recent years of Mississippi. In 1953, all of Mississippi's 783 tuberculosis beds were occupied, and there were 1,712 patients at home known to have active tuberculosis, most receiving no treatment at all. The State did not have funds or personnel to expand their facilities. Then came the development of isoniazid, and the State Health Department decided to set up an organized Statewide home treatment program, using local health department personnel and existing X-ray and laboratory facilities. It was an ambitious plan—and one undertaken with great courage and spirit. Treatment on the program was offered to patients for whom hospital beds were not available, those who refused hospitalization, and those discharged from the hospital to continue treatment at home. Wherever possible, medical care was given by the private physician; after a couple of years, the part-time services of two chest physicians were obtained to provide consultation through regional chest clinics. By 1956, over 1,800 patients in 82 counties were receiving treatment through the program: two-thirds of the newly reported active cases that year were put on the home treatment program.

This emergency program in Mississippi has not miraculously solved all of the State's problems in treating the tuberculous, but it has had an undoubted impact on the situation. An evaluation of the program in 1957 indicated that it had brought under treatment the large backlog of active cases that had existed at the beginning. Study of a group of patients who had been under treatment for at least

two years showed that 62 percent now had their disease arrested or inactive. Of those who still had active disease, 51 percent were bacteriologically negative. This is not a perfect score, but it is a great deal better than the situation before the Program was begun.

The examples cited are all drawn from the experience of places that, like Arkansas, still have sizeable tuberculosis problems. In none of the instances are resources available to do everything that could be done, within our present knowledge, to control tuberculosis. It would be difficult to find such an instance. But in Illinois and Baltimore and Mississippi realism has been combined with optimism

and determination in planning to do what can be done. They are good examples for that reason, rather than for the specifics, which may or may not apply elsewhere. The orderly, thoughtful planning of case-finding that was done for a whole State in Illinois, and for a particular community in Baltimore, is needed in every tuberculosis casefinding program. The resolution that Mississippi applied to finding a way to treat all tuberculosis patients is needed in every treatment program. Such approaches to tuberculosis problems will help to keep us moving toward the day when the disease will no longer loom up anywhere on the national scene.

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Pancreatic Surgery

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In the past three years more work has been done on diseases of the pancreas than any other single intraabdominal problem. In any scientific field in which fundamental knowledge is limited, controversy abounds. It is not surprising that an incredible difference of opinion exists regarding the proper surgical method of treating individual pancreatic disorders. Recent contributions to the literature concerning pancreatic surgery have been reviewed with the idea of summarizing significant advances.

ANNULAR PANCREAS

Cattell and Warren (1) continue to stress the dangers of direct attack upon this pancreatic deformity. Division or resection of the annulus may lead to injury to the major pancreatic duct or to pancreatic fistula or hemorrhage. In addition the annular segment may be divided without relieving symptoms. It is best to bypass the annular defect. In infants this can be done by duodenojejunostomy as the duodenum is not scarred or indurated. In adults, however, it is frequently preferable to perform gastroenterostomy and vagotomy since the pancreatic anomaly will be associated with a high incidence of peptic ulceration, making the proximal duodenum unsuitable for anastomosis to the jejunum. In adults with no associated duodenal ulceration or fibrosis duodenojejunostomy should be performed.

ACUTE PANCREATITIS

Space does not permit review of all of the conflicting opinions regarding the etiology of acute pancreatitis; however, no single cause for acute or chronic pancreatitis has been discovered. The two the-

ories that have received the most attention in recent years are those of obstruction to outflow of the pancreatic secretions from the duct system, and reflux from the common duct into the pancreatic duct through a common channel formed by the entrance of the duct of Wirsung into the common bile duct proximal to the papilla of Vater.

Lium and Maddock (2) have reported that experimental pancreatitis can be caused by obstruction to outflow from an actively secreting gland. This technic does not produce a fulminating, hemorrhagic form of the disease unless some other factor is added, such as interference with the blood supply of some of the pancreatic tissue.

Elliott, Williams and Zollinger (3) produced acute pancreatitis by the injection of a mixture of bile and pancreatic juice, previously incubated together for twenty-four hours under physiologic pressure. They concluded that obstruction at the sphincter of Oddi in the presence of a common channel in man permitted the flow of pancreatic juice into the biliary tree, with conversion of the trypsinogen to trypsin by its stagnation with bile. The mixture then infiltrated into adjacent pancreatic tissue at low pressure, producing pancreatitis.

Little progress has been made in the laboratory verification of this condition. The determination of serum trypsin levels as reported by Nordi (4) has been the only significant addition to the standard determinations of amylase and lipase levels.

It is extremely important to recognize the clinical manifestation of the disease, bearing in mind that symptomatology

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varies with the stage of the disease at the time the patient is observed. A patient seen within two or three hours after the onset of acute pancreatitis will have a clinical picture suggestive of acute cholecystic disease. If the patient is seen six to eight hours after the onset of an acute attack, the presence of a perforated ulcer is more likely to be suspected. By seventy-two hours after the onset of pancreatic necrosis and ileus, intestinal obstruction may be suspected.

Everyone is in agreement that the initial treatment of acute pancreatitis is medical. Vigorous treatment by gastrointestinal decompression and parasympathomimetic drugs to reduce pancreatic stimulation, fluid and serum replacement, should be routine. The marked serum loss and hemo-concentration which occurs with severe hemorrhagic pancreatitis is perhaps not generally appreciated. This serum loss can be as marked as with a severe thermal burn. Hypocalcemia should be anticipated and treated with large doses of intravenous calcium gluconate. While pancreatitis is not primarily a bacterial disease, patients should be treated vigorously with antibiotics since late bacterial invasion occurs and is found in nearly all patients who die of the disease.

In the author's opinion the use of cortisone in the treatment of acute pancreatitis is lacking in specific scientific support.

If the diagnosis is in reasonable doubt it is preferable to perform an exploratory operation than to miss the diagnosis of a perforated peptic ulcer or strangulating obstruction. If an operation is performed the proper management is dependent upon the degree of pancreatic involvement and the presence of associated disease in the biliary tree. If mild pancreatic edema and stones in the gall bladder are found, a cholecystectomy should be done. If pancreatic necrosis is associated with stones, a simple cholecystostomy is preferable. In the presence of severe pancreatic edema and necrosis and dilatation of the biliary tree without demonstrable stones, a cholecystostomy for decompression should be done. If no biliary tract disease is found the abdomen is closed without drainage.

Thus it is important to avoid operation during the early stages of the disease, but also important not to delay operation once pancreatic sepsis and abscess formation have occurred. When possible such septic accumulations should be drained through flank incisions to avoid spreading the infection within the peritoneal cavity.

POSTOPERATIVE PANCREATITIS

Postoperative pancreatitis is a bizarre and unpredictable disease. Cumulative reports indicate that this complication occurs most frequently after subtotal gastrectomy and operations on the biliary tree. Haffner and Ramsey (5) reported 4 cases of acute pancreatitis that followed 176 subtotal gastric resections with 2 deaths. Diffenbaugh and Strohl (6) pointed out that acute hemorrhagic pancreatitis is an infrequent but serious complication of biliary tract surgery. They incriminated the use of a long-limb T-tube traversing the sphincter of Oddi, urged careful manipulation of the common bile duct, and were wary of the use of a long-limb T-tube or the presence of a catheter traversing the ampulla. Acute pancreatitis has been reported to follow splenectomy and postoperative cholangiography (7). Robinson (8) reported a case that followed translumbar aortography. Pollock (9) reported 2 cases of frank pancreatitis that followed pancreatography with 1 death. Despite the wide variety of surgical procedures associated with postoperative pancreatitis and our inability to pinpoint the etiology in most cases, it seems only fair to conclude that direct trauma to the pancreas is the most likely cause. The average reported mortality of this complication is 50 per cent which emphasizes the extreme urgency of avoiding it whenever possible.

Postoperative pancreatitis should be suspected in any patient showing dramatic signs of intra-abdominal distress in the early postoperative period (24-36 hours). The initial signs may be a very rapid pulse and profuse perspiration. The pulse rate is out of proportion to the temperature elevation. Dramatic abdominal pain is as a rule not present. The early development and extreme persistence of ileus is suspicious of pancreatitis. The incidence of shock is high. The labora-

tory diagnosis and treatment is the same as for acute pancreatitis.

RECURRENT PANCREATITIS

More basic disagreement exists in the choice of a surgical procedure in the management of recurrent or relapsing pancreatitis than in any other area of pancreatic surgery. Many operations based upon divergent theories of the etiology of the disease have been reported in the past 15 years. These include cholecystectomy, choledochostomy, sphincterotomy, diversionary biliary-intestinal anastomosis and diversion of the gastric contents from the duodenum by gastroenterostomy, pyloric exclusion or subtotal gastric resection. Other operations designed to interrupt the pain pathways to the pancreas include thoraco-lumbar sympathectomy, splanchniectomy, vagotomy and celiac ganglionectomy. As long term poor results from the above procedures began to accumulate procedures aimed at a more direct attack on the pancreas were developed.

As more experience was gained it was observed that recurrent pancreatitis may occur without pain, whereas most patients experience such severe pain that narcotic addiction is common. It has also been observed that the disease may be hereditary (10), may be induced by excessive consumption of alcohol, and may contribute to the ultimate development of cholelithiasis.

Most authorities are in agreement that intrapancreatic obstruction, partial or complete, involving one or both of the major pancreatic ducts is present in most cases of relapsing pancreatitis, and almost always present in far advanced cases. DuVal's work with caudal pancreaticojejunostomy documented the observations in the literature that support the intrapancreatic obstruction theory. Caudal pancreaticojejunostomy was found to be the first procedure that consistently relieved the pain of recurrent pancreatitis.

Doubilet, Poppel and Mulholland (11) have reported a technic for delineation of the major pancreatic duct by pancreatography. The duct is cannulized after sphincterotomy and radiopaque material injected in a retrograde manner, accurately demonstrating the point of obstruction. Pancreatography is not without some

danger as anaphylactoid reactions have been reported during the procedure.

Pancreatic stones are generally thought to develop following partial or complete obstruction of the pancreatic ducts, resulting in stagnation of the pancreatic secretions and deposition of calcium concretions.

It is generally agreed that in all patients who have recurrent pancreatitis with associated biliary-tract disease, the biliary disease should be corrected as a preliminary to the management of the recurrent pancreatitis. If the degree of pancreatitis is mild and obstruction of the pancreatic ducts cannot be demonstrated, cholecystectomy and choledochostomy when indicated may be sufficient.

Because of the numerous operations recommended and the unsatisfactory results in many cases, many surgeons are gradually concluding that no single operation can be applied in the management of recurrent pancreatitis. The surgical procedure must be selected to suit the individual case. One or a combination of the following procedures when properly selected and carefully applied have the potential of relieving intrapancreatic obstruction. They are, transduodenal exploration and dilatation of the ducts of Wirsung and Santorini, pancreaticoduodenal resection, distal pancreatectomy and pancreaticogastrostomy or pancreaticojejunostomy.

Cholecystectomy and choledochostomy have little effect upon moderately active or advanced chronic relapsing pancreatitis. Gastric diversionary procedures are usually performed only in the presence of duodenal obstruction. Sphincterotomy alone has produced good results in only 50 per cent of the cases; however, when combined with some direct procedure upon the pancreatic ducts such as retrograde dilatation and intubation of the ducts or transpancreatic exploration and dilatation of the major pancreatic duct, good results are obtained in 70 per cent. Distal pancreatectomy seems indicated for far advanced pancreatitis in which the disease is localized to the distal segment of the gland. Pancreaticoduodenal resection should be reserved for far advanced cases when other procedures have failed. Transduodenal sphincterotomy should not

be regarded as an innocuous procedure, particularly in the presence of subacute pancreatitis. Doubilet and Mulholland who have had a large experience with this procedure reported a mortality of 5.3 per cent.

PANCREATIC CYSTS

Procedures employed in the management of pancreatic cysts include simple drainage, marsupialization, excision, internal drainage and resection. In the poor risk patient when the cyst does not appear to communicate with a major pancreatic duct, simple external drainage by inserting a dePesser catheter avoids annoying skin irritation.

Many retention cysts can be managed by excision, either by enucleation or by resection of the distal segment of the gland. Small pseudo cysts may also be resected. Neoplastic cysts whenever possible should be excised by distal pancreatectomy or pancreaticoduodenal resections. Multiple retention cysts secondary to relapsing pancreatitis are best handled by resection of the involved portion of the gland.

Internal drainage of pancreatic cysts has a definite place in the management of cysts, but in most cases a more suitable surgical method of treatment is available.

ISLET CELL ADENOMAS

Hyperinsulinism resulting from an islet cell adenoma or carcinoma is one of the most dramatic of all endocrine aberrations. Islet cell tumors may be nonfunctioning and it is estimated that the frequency of nonfunctioning tumors is half that of functioning tumors. Bredahl (12) observed that a positive family history of diabetes in a close blood relative was present in 24 per cent of his series. Morning determinations of fasting blood sugar are frequently misleading as they may be normal, or in some instances, patients may tolerate blood sugar levels as low as 30-40 mg. per 100 ml. without consistently having an attack. The glucose tolerance test is of equal unreliability and its importance has been over emphasized. It is preferable to attempt to reproduce attacks of hyperinsulinism by prolonged starvation (thirty-six hours). If an attack does not occur, the patient should be exercised under careful supervision.

A collective review of a large number of these patients revealed that an adenoma will be found in 75 per cent of the cases. It will be multiple in 10 to 12 per cent and ectopic in 2 per cent. Ten to 15 per cent will have a malignant adenoma, and in an additional 10 per cent the tumor will show microscopical evidence of malignancy, but will behave in a benign fashion.

ISLET CELL TUMORS (ULCEROGENIC)

In 1955 Zollinger and Ellison (13) described the syndrome which now bears their names: the presence of atypical peptic ulceration, frequently involving the jejunum, and associated with hypersecretion of the stomach and a tendency toward recurrence despite radical gastric surgery in association with adenomas or malignant tumors of the islet cells.

By mid 1957, 47 cases had been reported in the surgical literature. The Zollinger-Elison syndrome, while uncommon, should be suspected if the peptic ulceration is in an unusual location or if there is a recurrence of ulceration after an adequate surgical procedure. If there is recurrent ulceration, it seems reasonable to resect the body and tail of the pancreas on a suspicion of tumor, which may not be palpated. If, after adequate resection of the left half of the pancreas, there continues to be recurrent ulceration, total pancreatectomy would not be as acceptable from the patient's standpoint as total gastrectomy. If the tumor is found and is malignant, total pancreatectomy is indicated.

CARCINOMA OF THE PANCREAS AND PERIAMPULLARY REGION

After the classic description by Whipple, Parsons and Mullens (14) of radical pancreaticoduodenectomy in the management of periampullary lesions, it was hoped that at last an adequate operation for tumors in this region had been devised. This initial enthusiasm waned considerably as subsequent reports indicated that the procedure was associated with high morbidity and mortality and, more discouraging still, with a low salvage or cure rate. The pessimism reached a point where it appeared that the operation would be abandoned. Sufficient data are now available to permit evaluation of this procedure in the proper perspective.

In evaluating the value of biopsy in the diagnosis of carcinoma of the pancreas, only the advisability of biopsy in lesions that are operable should be considered. It is as a rule easy to establish a microscopic diagnosis in an inoperable pancreatic carcinoma. It is the concensus of opinion that biopsy is a rule and not indicated, particularly in the presence of operable lesions. The biopsy diagnosis is frequently misleading, and removal of the biopsy specimen may invite hemorrhage or post-operative pancreatic fistula.

The best current five year survival rates (15) for periampullary lesions are as follows: carcinoma of the common bile duct, 20 per cent; carcinoma of the duodenum, 37 per cent; carcinoma of the head of Vater, 36 per cent.

Because of the more favorable outlook in carcinoma of the ampulla of Vater, carcinoma of the distal common bile duct and carcinoma of the duodenum, as compared with primary ductal carcinoma of the head of the pancreas, it is extremely important that a distinction be made at the operating table between these various types of tumors. An aggressive attitude is justifiable in the management of primary carcinoma of the duodenum, distal common bile duct and ampulla of Vater, whereas one should be extremely wary of performing a radical resection of the head of the pancreas for primary pancreatic carcinoma. Radical resection should not be attempted if spread beyond the pancreas can be demonstrated, except in patients with cystadenocarcinomas and islet cell carcinoma, which may be extremely favorable for treatment despite their large size.

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Address to the Conference of Presidents and Other Officers of State Medical Associations**

THE HONORABLE PAUL M. BUTLER*

Dr. Engel, President-Elect Dr. Conzett, my colleague and co-worker on the American political scene, Senator Thurston Morton, and Ladies and Gentlemen: Being your guest this afternoon, I hope that you will not think it out of place for me as an American lawyer, pledged to uphold the Constitution of the United States of America, to take issue with the preceding speaker in his criticism of the highest court of the land.

With all due respect to His Excellency, the Governor of Mississippi, as an American lawyer charged, as he is, too, as an American lawyer, with the responsibility of supporting the Constitution of the United States and all of the institutions created and existing under it, including the Supreme Court, as the court of last resort of our country, I cannot sit idly by and agree with the proposition that he has made to you, distinguished members of one of the great professions of our country, against the Supreme Court of the United States.

I want to say to you that I recognize it as my duty, as my duty as a citizen, my duty as a lawyer, to support and to uphold the decisions of the Supreme Court of the United States, whether I like them or not, because they are the law of the land as completely as is the Constitution or any act of the Congress of the United States.

Now, I know that I am not going to be interrupted by much applause, as even that statement of basic Americanism was interrupted, but I do appreciate fully the spirit in which this invitation was addressed to me to speak this afternoon to this Conference of Presidents and Other Officers of State Medical Associations.

I noted full well, Dr. Conzett, your remarks that you believe in free speech, that we will listen to all but we will believe what we please, and I concur in that fully, so I have come in that spirit. I have come to you today to talk very plainly and very bluntly, not about the

general political picture but about medicine and the Democratic Party.

I am grateful to you for this opportunity to speak to you at this session of your Conference. I am quite sure that you expect me to speak frankly. That I intend to do. There is need for the record to be made clear here and now that the charge that the Democratic Party favors socialized medicine is utter nonsense. There is equal need, too, to make clear also that if socialized medicine should come to our country, it may well be that the medical profession itself may have brought it about.

My oldest son has forsaken the professions of his father, law and politics, to become a doctor, a goal which I hope with all fervor he will achieve, a noble profession which I hope he will honor and serve faithfully with *unselfish* and devoted work for the common good, so I start out by telling you that, despite the fact that I may be critical at times in this speech, I am friendly to your profession and as a lawyer I am as much concerned about its freedom from governmental control and regimentation as I am about my own profession of the law.

To me the general attitude of the medical profession towards the Democratic Party is a curious situation in view of the pre-eminent record of the Democratic Party in having sponsored virtually every moment in recent years to provide better medicine for all our people. Thus it would seem to me that the party of the people — for that is what the Democratic Party is — should be a natural political haven for you who are entrusted with safeguarding that precious asset of a people, their health.

Why, all too often, should the American Medical Association and the Democratic Party find themselves taking opposite stands on vital health issues? My fondest hope for my words here today is that just in some small way they may contribute to a better understanding of the problems that sometimes divide our respective organizations.

**Presented June 12, 1960

*Chairman of the National Democratic Party

At the outset may I define broadly the democratic feeling which underlies and governs our attitude towards health measures? It is simply that a basic duty of government is to provide for the people those essentials of life which they are unable to provide for themselves. Under the meaning of essentials certainly would come large-scale medical research, with the centralization and coordination such as is provided by the National Institute of Health in Bethesda, Maryland, the largest such research center in the world. It was conceived and started by a Democratic administration.

Another example of necessary government action was the handling of the Salk vaccine to ensure it was administered to a maximum number of people at a price they could afford.

This matter of price is important to our people. We know that millions of Americans go into debt to purchase medical care each year. We know that the average health insurance policy covers only about 25 per cent of the total cost of the average illness. Particularly is this cost of medical care a problem among the 16 million people who are 65 or over. Sixty per cent of our aged citizens have incomes of less than \$1,000 per year. Only about 40 per cent of this age group have health insurance. Much of it is inadequate in its coverage and the rates are high. In fact, an official of the Los Angeles Suicide Prevention Center told a Senate subcommittee recently that the high cost of medical care is the most important reason for suicides among the aged.

Now, I take it, ladies and gentlemen, that I am your guest and that you are going to agree with me, or disagree, and if any of you want to leave the room, why, feel perfectly free to do so. I hope that I may be given the courtesies of the previous speaker — without any of the applause. That is on the record, may I say to those of you who — guffawed — at my remarks, of the Senate subcommittee in the Senate of the United States. That is not a figment of my own imagination. It is from competent police authorities.

This is a problem of national importance. It calls for governmental action of the kind I mentioned a moment ago, to provide an essential of life which people

are unable to provide for themselves. It calls for government action because no other form of action has been forthcoming to meet the problem. Neither the American Medical Association nor private insurance companies have come up with a workable substitute plan, although they have condemned two Democratic measures in Congress which would go a long way toward meeting the problem. I refer to the Forand and McNamara bills, which would finance health insurance for the aged through the Social Security system.

May I say parenthetically that I believe that the Democratic National Convention meeting in Los Angeles four weeks from tomorrow will approve the Forand Bill by name specifically.

May I remind you that the Social Security program itself, founded under President Franklin D. Roosevelt in 1935, was branded socialistic and worse by the same organizations which today apply similar labels to measures for caring for the health of our aged.

When I said that neither the AMA nor private insurance companies have offered a workable substitute for the Forand or McNamara bills, I want you to know that is not only my opinion. In April, 1959, President Eisenhower's Department of Health, Education and Welfare has this to say, and I quote:

"The difficulties of providing hospitalization and health insurance coverage for the aged stem primarily from the fact that the aged require above average amounts of care and in general have below average incomes. Any large expansion—"

continues the quotation from the Administration—

"any large expansion of protection for the aged thus seems unlikely without some way of covering the costs by spreading them over other segments of the population and throughout the lifetime of the individual."

And still quoting:

"There is a question, however, of how far voluntary effort and private industry can go in developing the kind of distribution of cost that would be needed to assure adequate protection to all or a great majority of the aged."

It is true that the Administration, after

much pulling and hauling, and after much pressure from its own Party to come up with something to match the two Democratic measures, produced a health insurance bill of sorts for the aged, but it is a feeble thing indeed. It has been called an unworkable actuarial monstrosity — among other things. I believe that the worst aspect of the Republican measure is that it would require the individual beneficiary himself to pay the first \$250 of his annual medical bill and 20 per cent of the cost above \$250. Now, where does that leave the 60 per cent of our aged citizens who have incomes of less than \$1,000 a year?

Even Republican Governor Nelson Rockefeller, of New York, has blasted the Administration plan. Only this week he described it as, and I quote: “basically unsound, costly and cumbersome.” Earlier he had said that the heavy payments required by the states under the plan could mean, and I quote: “a very serious fiscal situation for them.” Not only that but he endorsed the Social Security approach of the Forand and McNamara bills.

There is a second health situation making headlines today in which the Democrats have taken the lead and in which, again, we look over our shoulders in vain for support from the American Medical Association. I speak of the scandal uncovered by the Kefauver Committee in the drug industry — and I do mean scandal, for here is a situation in which the motive for high profits has actually deprived some Americans of drugs they need.

The Kefauver Committee heard testimony, for instance, that thousands of mental patients had to return to mental institutions because they could not afford the high cost of tranquilizer drugs on the outside. It was testified that CIBA, one of the larger drug firms, sold to druggists for \$39.50 the same number of tranquilizer tablets it sold to the United States Government for 60 cents. It was brought out that the profit rate of the drug industry is the highest in the entire manufacturing field in our country. It was brought out that the Director of the Antibiotics Division of the Food and Drug Administration, Dr. Henry Welch, received \$287,000 in the last eight years, much of it from drug firms he was sup-

posed to regulate, from his private publishing business. This business profited largely by selling reprints of its articles to drug firms. It was brought out that Welch solicited the firms to buy these reprints of his own articles. Welch has been allowed to resign from the FDA without official censure or reprimand.

It was also brought out that officials of the twenty largest drug companies gave \$149,700 to the Republican Party in 1956 and \$4,000 to the Democrats. This latter is an interesting point when you consider that the Kefauver Committee undertook its investigation of the drug industry only when the Justice Department failed to act.

It is interesting, also, when one watches day after day the efforts of powerful Republican members of the Kefauver Committee to hamstring its operations, to keep the Committee from holding hearings at all, or to force it to hold secret sessions where the public couldn't see what was going on. Why, I wonder?

We Democrats would have welcomed the backing of organized medicine in seeking to bring this ugly situation in the drug industry out into the open. Instead we found, as quoted by John Lear in the *Saturday Review*, that officers of four state medical societies had telegraphed Republican Senator Dirksen, a member of the Kefauver Committee, that the doctor/patient relationship might be damaged if witnesses were allowed to criticize the drug industry in public. If that be so, gentlemen of the medical profession, why didn't the doctors themselves take the lead in cleaning up the situation in the drug industry?

We found also Dr. Austin Smith, former editor of the *American Medical Association Journal*, heading the powerful Pharmaceutical Manufacturers Association. Dr. Smith testified before the Kefauver Committee in defense of the drug industry.

I would like to speak clearly here. I believe that the moral tone of the drug industry and of a Republican administration which allows this situation to exist, is not one with which the organized medical profession of this country can afford to ally itself. I believe the position of the drug industry is indefensible in the public

mind. Medical associations, it would seem to me, can only demean the whole medical profession by taking any position which can be interpreted by the public as one of defending the drug industry.

Now, it might appear to some, with the rising life expectancy among our people and the new techniques available to our doctors, that the medical problems facing us have been reduced comfortably, but I believe the facts will not bear that out. For instance, the life expectancy of this country is fifth from the top among the nations of the world; our maternal mortality rate is only third best among the nations; our infant mortality rate is only tenth best. There are fewer physicians per 100,000 people in this country today than there were in 1921. We do not have enough hospitals or enough nursing homes and the quality of the nursing homes leaves much to be desired. We do not have enough schools to train more doctors. Millions of Americans are in debt for medical care and millions more put off treatment because of the fear of debt. Heart disease kills 900,000 Americans each year. The cancer death rate is 260,000 lives a year now. We need more and better medical research, but consistently, ever since President Eisenhower took office in 1953, his Administration of Republicans in Congress have opposed the necessary increases in medical research funds.

"It would be nice to be healthy," say the Republicans, "if it didn't cost so much." We Democrats believe that it costs too much not to be healthy.

Disease costs this country about \$35 billion a year, \$20 billion for medical care and \$15 billion in lost wages and lost taxes.

Over the last eight years the Democratic Party has significantly expanded our nation's medical research. The first budget submitted by the Republican Administration severely cut the medical research expenditures proposed in the last of the Truman budgets. Each year since, the Democratic Party has rejected inadequate Administration proposals and considerably increased funds for medical research. While the \$400 million Administration budget for medical research during fiscal 1960 is a vast improvement over

the \$50 million recommended by the Eisenhower Administration early in 1953, the amount of \$400 million is still a relatively small expenditure when related either to the Federal research expenditures generally or to the specific annual cost of disease. With the great increase in Federal research and development expenditures since World War II, medical research has barely held its own at about 5 per cent of our total research expenditure. The Federal medical research expenditure is only about 2 per cent of the accepted cost of disease figures.

A year ago the Senate Appropriations Committee appointed a committee of medical and lay leaders to conduct a comprehensive study of the exact capability of this nation in the field of medical research. This group, reporting last month, said, and I quote:

"The proportion of the national income now devoted to health research is small in relation to the need and to the great economic return which has come from medical research in the past.

"The Committee is confident that the nation will support any level of research for which the men and ideas are available."

The Committee recommended \$664 million for the medical research programs of the National Institutes of Health during fiscal 1961, an increase of \$264 million over the present figure and over the sum recommended by the Administration.

The Committee went on to predict that by 1970 the total support of medical research in this country may very well require annual expenditures of \$3 billion, of which more than \$2 billion, in all likelihood, will be provided by the Federal Government.

The Republican Administration has constantly neglected the development of a major medical research program in the Veterans Administration, with its 122,000 beds located in 170 hospitals all over the country. In the early years of the present Administration, the VA medical research program struggled along with an annual allocation of about \$5 million, compared with an annual VA hospital budget of \$800 million. Over the last five years Democratic leadership in both Houses of Congress has concentrated on

lifting the level of the VA medical research program. By 1958 it had reached \$15 million, but the Administration cut it back to \$11 million last year.

You well know that there is a critical shortage of doctors in America today. Most recent estimates are that we need a minimum of 25,000 more doctors to provide adequate medical care for our growing population. Ever since 1949 the Democratic leadership in Congress has been trying to pass legislation to expand the capacity of our medical schools to train more doctors. Such legislation passed the Senate on two occasions during the Truman Administration but was bottled up in the House, I am sorry to say, by the combined opposition of the Republican leadership and the American Medical Association.

In 1951 Senator Robert Taft joined forces with the AMA to defeat an Aid to Medical Education Bill which he has originally sponsored.

Again I ask, why does the AMA take this position?

In 1958 Dr. Leroy Burney, Surgeon General of United States Public Health Service, rang the alarm bell on the doctor shortage when he told the American College of Surgeons that the balance between doctors and patients in this country was, and I quote: "at the peril point." But the alarm did nothing to bring a legislative proposal from the Administration. Instead that famous Republican delaying tactic, the study group, was brought on to the scene and valuable time was lost while they studied instead of acting.

Another serious problem now is that of attracting students into the field of medicine. With the rising cost of tuition at medical schools, a medical education is being restricted increasingly to the sons and daughters of high-income families. Since 1950 the number of applicants for medical schools has dropped by one-third, a startling indication that the cost of medical education is an increasing obstacle to the recruitment of able students. A recent study showed that one-third of all medical school graduates are at least \$2,000 in debt upon completion of their

education and 17 per cent of the medical graduates have debts of \$5,000 or more.

As I said at the beginning of this talk, I hope my words contribute in some part to a better understanding between your professional organizations and the Democratic Party. I assure you that there is action being taken in the Democratic Party to back up my words.

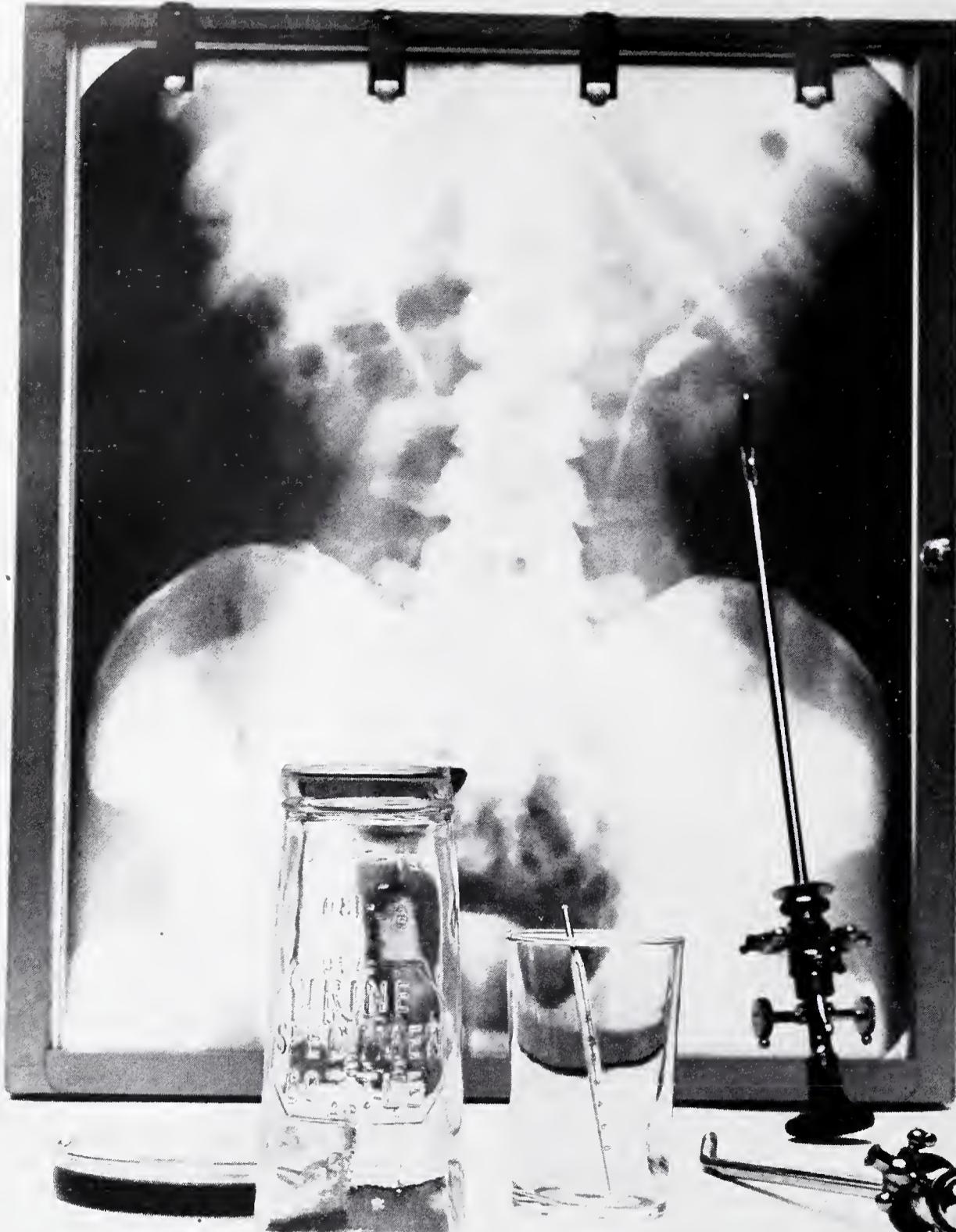
Within the last month the Advisory Council of the Democratic National Committee has established an Advisory Committee on Health under the chairmanship of an eminent heart surgeon, Dr. Michael E. DeBakey, head of the Department of Surgery at Baylor University, and recipient of the Distinguished Service Medal of the American Medical Association for a brilliant six-year project which demonstrated conclusively that many kinds of strokes can be treated surgically.

I am proud to say also that this Committee includes many other distinguished members of the medical profession. Among them are three Nobel Prize winners in medicine, Dr. Salmon A. Wesman, who won the award for his discovery of streptomycin; Dr. Philip F. Hensch, honored for his discovery of cortisone; and Dr. Dickenson W. Richards, recognized for his discovery of a new method of diagnosing heart disease by the insertion of a tube into the heart.

The purpose of our Health Committee will be to provide searching inquiry into the health needs of our country. I am sure that the work of the Committee will be of value to your profession as well as to the American people as a whole.

In closing may I say that I am immensely proud of the accomplishments of the Democratic Party in the field of medicine. I believe our record shows clearly that we have searched for the real problems confronting our nation in the medical field and that we have sought intelligent solutions to those problems and intelligent advice. I believe further that Democratic programs in providing medical care for those unable to provide it for themselves, in providing for medical research, in providing for more medical training, deserve the support of doctors and related professions, indeed the support

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of all those interested in seeing that there is enough good medical care for all the American people.

There is every reason, I say to you, my

fellow Americans, why all of us should work together in this most important field for the common good, and I thank you for your very polite attention.

A TEACHING SEMINAR FROM THE UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE

Primary Aldosteronism

ALLEN ROZZELL*

ALDOSTERONE

In 1953 Simpson et al (2-38) isolated from an amorphous fraction of adrenal extract a new adrenal hormone in crystalline form. A year later the same group established the chemical structure as the 18-aldehyde of corticosterone (2-37). This hormone, aldosterone, will be briefly discussed.

BIOSYNTHESIS

The biosynthesis of aldosterone has not been completely elucidated at this time. However, it has been demonstrated by Ayres et al (3) using capsule strippings of ox adrenal gland, which consist mainly of the glomerular zone, that a major, but not necessarily the only pathway of aldosterone synthesis, is through its formation from progesterone, corticosterone and desoxycorticosterone.

SITE OF SECRETION

Numerous workers have demonstrated that in animals, namely the ox (3), dog (13) and rat (19), the major site of aldosterone production is in the glomerular zone of the adrenal cortex. According to Bloch et al (7), working with adrenal extracts from human fetuses, the adrenal androgens are synthesized in the reticular zone, the glucocorticoids in the fascicular zone, and the mineralocorticoids in the glomerular zone.

CONTROL OF SECRETION

Aldosterone secretion is not controlled solely by the pituitary or ACTH. In hypophysectomized dogs the adrenal cortex atrophies but the glomerular zone appears normal microscopically, the atrophy being confined to the fascicular zone and reticular zone (13). In hypophysectomized animals there is continued, but decreased aldosterone secretion (13, 17, 39). The inhibition of ACTH with large amounts of corticosteroids produces no significant decrease in the secretion of aldosterone (16). ACTH administration produces insignificant effect on aldosterone secretion in normal (16) and hypophysectomized dogs (13, 17).

The adrenals of dogs subjected to large amounts of ACTH demonstrate hypertrophy of the fascicular and reticular zone but the glomerular zone appears normal (13). This finding lends support to the hypothesis that the glomerular zone is the site of aldosterone secretion.

It has been well documented that dietary changes in electrolytes effect aldosterone secretion. When human subjects or animals are placed on a sodium restricted but otherwise normal diet, aldosterone secretion is increased (6, 15, 26, 35).

In rats depleted of sodium there is significant adrenal hypertrophy when the adrenal weight is related to total body

*Senior Medical Student Essay

weight, but there is decreased total adrenal steroid secretion and an increased aldosterone secretion (15). Progressive hypertrophy and hyperplasia of the glomerular zone is present in these sodium deficient rats. Also there is an increase in the size of the lipid droplets in the cells of the glomerular zone. Extreme atrophy and lipid depletion is observed in the fascicular zone. The hyperplasia, hypertrophy, and increase in size of the lipid droplets is apparently correlated to the increased aldosterone secretion (19).

Potassium loading in the presence of a low salt diet increases aldosterone secretion (23, 25) but with a normal diet the increase is not as great (25, 27). Conversely sodium loading or potassium restriction decreases aldosterone secretion (23). Potassium deficiency in the intact rat reduces aldosterone secretion, but sodium deficiency has no significant effect (39).

It appears that aldosterone secretion responds to salt intake in such a manner as to maintain homeostasis, i.e. when salt intake is reduced, aldosterone is increased, and vice versa.

The method by which these electrolyte changes act is apparently through alterations in the body fluid volume. It has been demonstrated that aldosterone secretion is decreased by measures which increase the extracellular fluid volume, regardless of the intracellular fluid volume, serum sodium or serum potassium levels. Conversely aldosterone secretion is increased when the extracellular fluid volume is decreased (6).

A volume receptor, as suggested above, may be the sensitive organ in control of aldosterone secretion, since an acute blood loss results in a marked increase in the aldosterone secretion. This response cannot be correlated with changes in the serum electrolytes or the total blood volume (36).

The primary mediator of aldosterone secretion is apparently centered in the diencephalon. Rauschkolb and Farrell (31) observed a decrease in aldosterone secretion in dogs after decapitation and decerebration but not after decortication or transection of the spinal cord. They postulated that the regulatory center is located in the diencephalon and acted upon the adrenal secretion of aldosterone by release of a circulation hormone.

SITE AND MODE OF ACTION

The kidney is the main site of action of aldosterone. Both the proximal and distal tubules have been implicated. In the distal tubule the cation exchange mechanisms appear to be involved in the sodium retention and the potassium excretion.

Acidification of urine takes place in the distal tubule. Carbonic acid is formed in the renal tubular cell by the action of the enzyme carbonic anhydrase, hydrating the carbon dioxide produced metabolically in the renal tubular cell. The hydrogen ions from the ionized carbonic acid are exchanged for the sodium ions present in the tubular urine. The sodium ions are then reabsorbed as bicarbonate ions (30).

Normally the kidney excretes an acid, potassium poor urine in potassium depletion. However, in patients with primary aldosteronism the urine is alkaline because of the increased potassium and decreased hydrogen excretion (14).

The concurrence of a potassium rich, alkaline urine is of hormonal action and is not due to non-specific renal damage as indicated by the prompt recovery of normal renal function after removal of the aldosterone producing tumor. Therefore the excess urinary excretion of potassium seems attributable to the direct action of aldosterone on the renal tubular cells, and may reflect the basic mechanism of this hormone's action (14).

The intrarenal infusion of aldosterone in dogs produces potassium excretion, but no demonstrable sodium retention. In the same dogs after adrenalectomy aldosterone produces sodium retention and potassium excretion (4). Therefore it appears that the cation exchange mechanism previously described does not fully explain the amount of sodium retained.

Nicholson (29) observed that the in-

TABLE 1
A Summary of Aldosterone Response²

Alteration in Dietary Electrolyte		Effect Aldosterone Response	
	Na & Fluid	} depletion	
↓ Na			↑
↓ K	"		↓
↑ K	"		↑
↑ Na	"	} retention	↓

travenous infusion of aldosterone, which produced a significant decrease in sodium excretion in the normal kidney, had no effect on sodium excretion in the kidney in which the proximal tubules were damaged. In the kidney with distal tubular damage the hormonal effect was as great as in the normal kidney. The conclusion was that the reabsorption of sodium, under the control of aldosterone, takes place in the proximal tubule.

At present it appears that aldosterone acts on both the proximal and the distal renal tubules, but its mode of action, other than being partially involved in the cation exchange mechanism, has not been definitely established.

BIOLOGIC PROPERTIES

The major role of aldosterone is to modify electrolyte transport, causing sodium retention and potassium excretion, without any appreciable effect on water metabolism. Aldosterone is found to be at least twenty times more potent than deoxycorticosterone in respect to electrolyte metabolism (22, 27).

An inverse correlation exists between aldosterone and the sodium excretion in urine, accompanying a decrease in aldosterone output there is an increase in sodium excretion in the urine. A marked decrease in glomerular filtration rate and effective renal plasma flow is also observed (13).

Notable effects of aldosterone on electrolyte metabolism have been observed not only on kidney function but also on sweat and salivary excretions. Small amounts will depress the salivary sodium:potassium ratio without any effect on sweat sodium. This depressed ratio has been shown to be due to the decreased sodium content of saliva after the injection of aldosterone (2). These findings have been observed in patients with primary aldosteronism, except that the sweat sodium is also greatly decreased (12).

Aldosterone does not have any important glucocorticoid effect in physiological amounts. The normal level of aldosterone secretion is approximately one hundred times less than that of hydrocortisone, whereas equal quantities of these hormones have about the same glucocorticoid effect (2).

PRIMARY ALDOSTERONISM

In 1955 Dr. J. W. Conn described a new clinical syndrome for which he proposed the term of primary aldosteronism. The patient was a 34 year old woman with complaints of intermittent episodes of weakness, "paralysis", and spasms for seven years duration. The patient was known to have had hypertension for the past four years. Between the attacks of weakness and "paralysis" the patient was asymptomatic. Physical examination revealed well developed musculature, positive Chvostek and Trousseau signs, generalized hyperreflexia, and a blood pressure of 176/104. Laboratory studies revealed hypernatremia, hypokalemia and alkalosis. Urinary 17-ketosteroid and 17-hydroxysteroid levels were normal. Urinary aldosterone levels were assayed as greater than ten times the normal value. Other urinary studies were within normal limits except for hyposthenuria, a trace of albuminuria and an alkaline urine. Sweat and saliva analysis revealed depressed sodium and chloride concentrations with abnormally high potassium levels. Long continued administration of potassium did not alter the symptomatology or the serum electrolyte abnormalities. With administration of either compound F or ACTH, high 17-hydrocorticoid levels were obtained and sodium diuresis occurred. This suggested that high levels of ACTH, in the presence of excess aldosterone, act as an antagonist to aldosterone, reversing the direction the sodium ion moves across the cell membrane (9).

The patient was explored surgically and a four centimeter cortical adenoma was found. A right adrenalectomy was performed. Bioassay of the tumor revealed tremendous amounts of aldosterone. Multiple skeletal muscle biopsies revealed an increased intracellular sodium and a decreased intracellular potassium. Histologically the tumor tissue resembled the fascicular zone. Microscopic evidence of atrophy of the fascicular zone in the contralateral adrenal suggested that this zone was responsible for the secretion of aldosterone. Within ten days after surgery all the abnormal serum electrolytes returned to normal and the patient became asymptomatic (11).

Since this original description numer-

PRIMARY ALDOSTERONISM

ous identical or closely similar classes have been reported in the literature (1, 5, 12, 20, 21, 28, 40).

According to Conn (8) primary aldosteronism may be classified as pure or mixed. The mixed types are associated with the excess production of cortisol, so the classical symptomatology may be varied. He also feels that the clinical entity of potassium-losing nephritis is probably a manifestation of primary aldosteronism (11).

The diagnosis of primary aldosteronism should be entertained in any patient who exhibits the typical serum electrolyte abnormalities and has unexplained hypertension (Table 2).

TABLE 2
Primary Aldosteronism

Clinical	Laboratory
1. Hypertension	1. Hypokalemia
2. Periodic muscle weakness tetany and paralysis	2. Hypernatremia
3. Polydipsia	3. Alkalosis
4. Polyuria	4. Hyposthenuria
5. Nocturia	5. Alkaline urine
6. No edema (usually)	6. Elevated urinary aldosterone level

The diagnosis can usually be assured by the determination of the urinary aldosterone level, and finding the level unusually high.

TREATMENT

The only effective mode of therapy is surgical excision of the adrenal containing the adenoma. This usually gives a rapid cessation of symptoms, serum electrolytes return to normal values, urinary aldosterone levels become normal, hypertension is improved, and kidney function is usually restored (11, 12, 20).

PATHOLOGY

In patients with primary aldosteronism the fascicular zone is frequently considered to be the site of aldosterone secretion (11). Tumor tissue histologically resembles the fascicular zone (5, 11, 12, 40) and this zone in the adjacent normal tissue or in the contralateral gland has been reported to appear atrophic, (11, 40) or normal (5, 12).

It is interesting that cases of primary aldosteronism have been reported with cortical adenomas (5, 11, 12, 20, 28, 40) and normal adrenals (1, 21).

Grossly, cortical adenomas are bright yellow to brown in color, usually encapsulated and well circumscribed (20, 41). Microscopically the component cells resemble those of the normal adrenal cortex and are arranged in parallel cords similar to those found in the normal fascicular zone. The cells are large and polygonal with vesicular nuclei and contain large amounts of lipids in the cytoplasm. These cells are sometimes designated as "spongioblasts" because on routine H and E preparations the lipid substance is dissolved and the cells appear vacuolated (41).

The other diseased organ is the kidney. Histologically, the lesion is limited to the tubular cells and is characterized by diffuse hydropic vacularization. This lesion is observed in chronic hypokalemia in man, whether due to prolonged diarrhea or primary aldosteronism. In most instances this anatomic abnormality is slowly reparable after the replacement of the sodium deficit (10, 32). Potassium depletion can now be added to the list of reversible renal diseases (33). Conn and Johnson (10) have coined the term "kaliopenic nephropathy" for this clinicopathological entity.

PATHOLOGIC PHYSIOLOGY

The pathologic physiology of primary aldosteronism is fairly well understood. The weakness, tetany, polydipsia, polyuria and nocturia are secondary to the chronic potassium depletion and its effect on the kidney (32, 33).

Alkalosis also accompanies potassium depletion, probably through an acceleration of sodium-hydrogen exchange in the renal tubule with a subsequent increase in the sodium bicarbonate reabsorption (34). Usually this results in an acid, potassium poor urine, but in primary aldosteronism the urine is alkaline because of the increased potassium and decreased hydrogen excretion (14).

The absence of edema in primary aldosteronism has been attributed to the "escape" from sodium retention that occurs with continued administration of desoxycorticosterone. A similar "escape" occurs with aldosterone (2). However, the presence of edema need not exclude the diagnosis of primary aldosteronism. A case has been reported with significant

peripheral edema (18). A similar case was reported to have mild, pitting, ankle edema (12).

The hypertension found in patients with primary aldosteronism may be attributed to the excess sodium ion retention (14). Kumar et al (24) produced hypertension in rats, without water retention or edema by the long continued administration of nearphysiologic amounts of aldosterone.

SUMMARY

Aldosterone has been isolated from an amorphous fraction of adrenal extract. It has been crystallized and its formula determined. It is considered to be a true hormone secreted by the glomerular zone of the adrenal cortex. Its pathway of biosynthesis is yet uncertain, but it seems to be through its formation from progesterone, corticosterone, and desoxycorticosterone. Secretion is probably regulated by electrolyte-fluid volume changes acting through a central nervous system center, probably located in the diencephalon. ACTH has no appreciable effect on aldosterone secretion. Aldosterone probably acts on the proximal and distal renal tubules, but its mode of action, other than being partially involved in the cation exchange mechanism, is uncertain. Aldosterone is the most important hormone involved in electrolyte metabolism and in maintaining fluid and electrolyte homeostasis. Aldosterone is much more potent than desoxycorticosterone in causing sodium retention and potassium excretion. In physiologic doses it is believed to have no effect on carbohydrate and protein metabolism.

The characteristic clinical picture of primary aldosteronism consists of periodic muscular weakness, intermittent tetany, hypertension, polyuria, nocturia and polydipsia, usually without edema.

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What Is Your Diagnosis?



FOR ANSWER SEE PAGE 142

Arkansas Public Health at a Glance

Education of the public is a necessary part of any successful public health program. A great deal of the health education effort in Arkansas, as in most states, is centered in the elementary and secondary schools. This is a group at a time of life and in an environment that is most conducive to learning.

The health education programs in Arkansas schools are certainly not as good as they should be. Lack of trained personnel, insufficient time in the curriculum and a number of other items act as handicaps to reaching a truly desirable program. With this in mind, an attempt has recently been made to determine just



FEATURES

what the results of our health education efforts are in terms of the amount of health knowledge retained by the students. A nationally standardized health knowledge test was given to a group of college freshmen in one of the state supported institutions of higher learning. This test was given to 153 college freshmen who had not yet received any formal instruction in health at the college level.

There were one hundred questions on the test and they covered nearly all aspects of health knowledge such as mental health, communicable disease, dental health, nutrition, etc. The average grade was 64 correct out of the possible 100. National statistics show that the average score on this test by college freshmen was 66. The Arkansas scores ranged from a high of 85 (made by the daughter of a physician) to a low of 29. This too compares well with the national figures.

While the Arkansas scores seem to in-

dicate that our high school graduates compare favorably with other college freshmen throughout the country, there were several of the individual questions which showed surprising results. One-third of the students did not know that tuberculosis was an infectious disease. Seventeen percent thought it was the result of faulty nutrition. Forty-three percent thought there was value in the use of raw meat to treat a "black eye," and sixty-three percent did not know that alcohol acted as a narcotic (depressant) on the nervous system.

The accompanying chart shows the comparison between Arkansas and national results of selected scores. The top or heavy black line indicated the percentage of college freshmen on a national basis who were below and the percentage above that particular score. The second or striped line shows the percentage of Arkansas freshmen below and the percentage above that score.

The New Specialty — Doctor of Economic Laws

ALFRED KAHN, JR., M.D.

There is a great temptation on the part of the Medical Profession to try and “doctor” economic laws. Trained economists and heads of state are chary about invading this area. The laws of economics in a country, where private enterprise is practiced, enforce an adequate monetary discipline, provided there are safeguards against inflation and an adequate code of civil law — nor does this constitute an endorsement of *laissez faire*.

Recently, physicians have been blamed for the rise in the cost of medical care. They have been asked to endorse schemes to stabilize costs in an inflationary economy. This is manifestly impossible. It has been shown that the cost of medical care has risen only proportionately with the rise in living costs — or perhaps less than the general rise in living costs. The remedy lies in curbing inflation and socialistic trends that we cannot afford.

The unrelenting weight of political pressures such as the threat of a Forand Bill, have failed to stir the physicians to analyze the political motives behind such bills; the question arises does the government owe us an opportunity or does the government guarantee medical care to everyone. Anyone who needs medical care should get it, but this is certainly not a governmental function; it is the lot of the physicians to supply this.

One of the avowed early aims in all schemes of Socialism is to socialize the medical profession. Political efforts are aimed in this direction. At times, socialistic schemes are bluntly and openly sought. Far more dangerous is the process of nibbling away the rights of a profession in a system of free enterprise; in England, the socialists were called the Fabians, and bit by bit, over the years fought for certain political ideas until the physicians, the railroads, coal mines, and other industries were socialized; the process was so insidious that it happened

before the concerned parties could effectively counter it. The Medical Profession in this country must guard against any steps, no matter how small, leading toward socialism.

The most important thing for all physicians to remember is that Socialism is simply a different means of rewarding the physicians' effort, and its principal purpose is to promote to the public the phony idea that you can get something for nothing. Taxes in socialistic states are so high that all incentive to work hard is gone. An example is available: compare the level of prosperity and the standard of living in the European socialist countries with those enjoying free enterprise.

Insidiously, our profession is being harassed from another quarter. This is the introduction of a third party into the traditional physician-patient relationship, and for that matter, there is even intrusion between physicians.

The Service Type insurance policy offered by Blue Cross, which has pioneered health insurance, stipulates that their fee will be the sole fee collected by a physician for his service to the patient. Is the physician to be denied the right to set his own fee for services rendered his own patient? If he refuses to be bound by this type of policy will he suffer economic ostracization to the extent that he will be forced to accept such schemes? Schemes such as this are a step forward to the loss of economic freedom; perhaps the loss portends the gradual erosion of other freedoms.

What about panel practice? Can a group of physicians hired by an organization maintain the close doctor-patient relationship necessary for the practice of good medicine? The patient has no true choice of physician, long considered a paramount requisite to good practice. Again in this system, there is a loss of economic

freedom; the physician is either a salaried employee or is bound to accept a set fee for his services.

Then there is Medicare, a vast unwieldy socialistic scheme which works to no one's advantage. Here the government foots the bill for the dependents of Military personnel. The confusion engendered by this more than paternalistic arrangement is overwhelming. After filling in a form including code numbers and getting requisite signatures your secretary submits the Medicare form for approval and payment. Innumerable barriers suddenly arise to payment. The code numbers are wrong; the service was not authorized; et cetera. Most embarrassing of all is that after payment, a year may elapse and suddenly the government disallows your claim. The physician must then contact the patient, if there has not been a transfer of Station to a distant point, and explain, "Well Uncle Sam has just disallowed your bill for my services and you are the responsible party." This is hardly calculated to "Win Friends and Influence Patients". Most Medicare qualified patients sooner or later seek services not covered by the program and this occasions endless confusion. Why does not the government increase the pay of Military personnel rather than attempt to continue the costly, cumbersome Medicare program?

The Relative Value Scale is a new contender. It is being used as a yardstick for estimating professional services. The casual reader might exclaim, "The surgeons really got there first." Of course, this is not so but there is a disparity between the fee scale of the surgeon and the internist, for example. Professional services are difficult to compare but a lopsided scale of values is predictably certain to injure interprofessional relationships, and this in turn leads to poorer medical care for the patient.

Basically, in a society espousing private enterprise, synthetic manipulation of economic laws is sure to bring a deterioration in the system which will reflect itself in many walks of life. Physicians are exceedingly vulnerable to economic pressures because as professional people, they lack the time and experience to counter the force applied. We ought to wake

up before we are the minions of a bad system partially fostered by our own indifference.

MEDICINE IN THE NEWS

The Month in Washington

Washington, D. C. — An omnibus bill approved by the House Ways and Means Committee contains two provisions of major importance to physicians — Social Security coverage for doctors and a federal-state program to provide health care for older persons with low incomes.

About 150,000 self-employed physicians would be covered by Social Security on the same basis as lawyers, dentists and other self-employed professional people now are covered. Becoming effective for taxable years ending on Dec. 31, 1960, or June 30, 1961, self-employed physicians would be required to pay a Social Security tax of 4½ per cent of the first \$4,800 of income. Physicians also would be subject to the automatic increases in the Social Security tax in future years.

Medical and dental interns would be covered for the first time also.

Rep. Wilbur Mills (D., Ark.), Chairman of the Ways and Means Committee, was the main architect of the health program for "medically indigent" aged. It was designed to provide a broad range of hospital, medical and nursing services for persons 65 years of age and older who are able financially to take care of their ordinary needs but not large medical expenses.

It would be up to each state to decide whether it participates in the program. The extent of participation — the number of benefits offered to older persons — also would be at the option of individual states.

The states would determine the eligibility of older persons to receive benefits under the program. However, the legislation laid down a general framework for eligibility: persons 65 years and older, whose income and resources — taking into account their other living requirements — are insufficient to meet the cost of their medical care.

The program couldn't become effective until July 1, 1961. Before putting such a program into effect, a state would have to submit to the Federal government a plan meeting the general requirements outlined in the legislation.

The program would be financed jointly by the Federal and state governments. Federal grants would have to be matched by participating states on the same basis as under the present-old age assistance formula.

States could elect to provide, with Federal financial aid, any or all of the following benefits:

1) Inpatient hospital services up to 120 days per year; 2) skilled nursing-home services; 3) physicians' services; 4) outpatient hospital services; 5) organized home care services; 6) private duty nursing services; 7) therapeutic services; 8) major dental treatment; 9) laboratory and X-ray services up to \$200 per year, and 10) prescribed drugs up to \$200 per year.

The committee put a \$325 million price tag on the program for the first full year of operation — \$185 million Federal and \$140 million state. However, this estimate could hardly be more than an educated guess of sorts. The actual cost would depend upon unpredictable factors — how many states would participate how many benefits they would offer, and how many older persons would qualify and what services they would require.

The committee estimate was based on between 500,000 and 1 million older persons a year receiving health services under the program. If all states participated fully, the committee said, potential protection would be provided as many as 10 million aged whose financial resources are so limited that they would qualify in case of serious or extensive illness.

Payments under the program would go directly to physicians and other providers of medical, hospital and nursing services.

In addition to the federal grants for the "medically indigent," about \$10 million more in federal funds would be authorized for payment to states for raising the standards of medical care bene-

fits under present public assistance programs for older persons.

The approach of the Mills program was similar to that of Point 2 of the American Medical Association's 8-point program for health care of the aged. Point 2 stated that the AMA supports federal grants-in-aid to states "for the liberalization of existing old-age assistance programs so that the near-needy could be given health care without having to meet the present rigid requirements for indigency." Such a liberalized definition of eligibility should be determined locally, the AMA said.

Approval of the Mills plan by the committee marked a sharp setback for organized labor leaders. But they continued their all-out pressure campaign in an effort to get Congressional approval of Forand-type legislation that would use the Social Security system to provide hospitalization and medical care for the aged. After being defeated in the Ways and Means Committee, labor union leaders and other supporters of Forand-type legislation directed their major efforts to trying to get the Senate to substitute the Social Security approach.

The committee had been considering health-care-for-the-aged legislation intermittently for more than a year. Hearings were held on the Forand bill last summer but action was postponed until this year.

Prior to approving the Mills plan, the committee rejected the Forand bill (three times) and the Eisenhower Administration's far-reaching public assistance alternative. Both plans were opposed by the medical profession and allied groups.

While these legislative proposals were in the limelight, a little-noticed bill was enacted into law to give \$50 million in relief to taxpayers burdened with taking care of ill dependent parents.

The new law permits taxpayers full deduction on federal income taxes for medical and dental expenses paid for a dependent parent 65 years of age and older. Previously, such a deduction was limited to costs in excess of three per cent of the taxpayer's adjusted gross income.

Changes in the Social Security program called for in the catch-all bill ap-

proved by the Ways and Means Committee included:

1) Eliminate the requirement that a disabled person must be at least 50 years old to be eligible for Social Security benefits.

2) Provide Social Security benefits for about 25,000 widows of workers who died before 1940.

3) Increase the benefits of 400,000 surviving children of workers covered by Social Security.

Although all these revisions will increase costs of the program, neither the Social Security tax rate nor tax base was increased.

The revisions will mark the fifth consecutive year of a national election that the Social Security program, originally enacted in 1935, has been expanded. Some of the expansions have been accompanied by tax increases.

From the American Association Of Medical Assistants, Inc.,:

FEDERAL AID

Federal "aid" in its various and sundry forms has a much more serious and significant threat and portent than merely handing out taxpayers' hard-earned dollars.

In the 1960 national budget some \$40.9 billion was allocated for national defense. In the 1961 budget presented by President Eisenhower this figure has been increased by \$50 billion. This tremendous outlay of our nation's wealth, work and resources is due to the threat of communism.

Of course the communist threat is real and it is also very dangerous, but let's take a closer look — right here at home — here, in the land of "it can't happen here . . . not to US!"

Here is the land of compulsory social "security," the land of federally subsidized housing, shipping, airports; the land of the costly, wasteful, economically unsound farm price-support program; the land of paying workers when they are not working; paying farmers for not farming; the land of tax-supported public power; the land of union monopoly . . .

Here is the land whose government is rapidly taking over control and ownership of the people, depriving them of their in-

dividual liberties, dignity, and self-respect . . .

Here is the land in which too many individuals, by thinking they can get something for nothing and by not being able to see further than their government checks, have sold themselves into bondage and slavery.

Here is the land dreamed of, conceived, born and developed on the basis of individual freedom, individual enterprise, individual dignity and integrity; the land for whose freedom, individual and collective, many of our sons and fathers died on the battlefield to preserve.

. . . Which is the greater threat to our country — Khrushchev and his gang of cut-throats — or is it our own self-centered greed, individual and collective, that is rapidly driving us down the road to socialism . . . ?

We can take heed to and warning from the words of Mr. Communism himself, Nikita Khrushchev, who said "Communism cannot be achieved without first building socialism. Society cannot leap into communism from capitalism without going through a socialistic stage of development. The transition in which socialism develops into communism is a regular historical process that cannot be arbitrarily violated or avoided." In the communist manifesto's 10-point plan for undermining capitalism, Karl Marx listed as the second point, "A heavy progressive or graduated income tax."

Certain labor bosses and other architects of the welfare state are directing a massive effort to sell America on a program constituting a major step in the direction of socialized medicine administered by a government bureaucracy. In their desperate bid to sell their program to the American public and to distract attention from the lack of the true merit in the proposal, the well-organized and well-financed proponents of this step toward socialized medicine have printed cards which bear a verse taken from the 71st Psalm which reads:

"Cast me not off in time of old age; forsake me not when my strength faileth." Taken tragically out of context and put to distorted use, this verse from the 71st Psalm, read in context, is indeed a prayer to God and manifests faith in His boun-

ty, which is evident from the first verse in the 71st Psalm, which reads:

"In Thee, O Lord, do I put my trust; let me never be put to confusion."

The Forand bill proponents presumably would have us transfer our faith to the materialism of paternalistic government. How can we ever effectively combat and counteract the communist threat if we cannot effectively combat the threat that is next door to communism itself — socialism?

Foreign Fellowships

Evanston, Ill. — Twenty-eight American medical students will go into the dark corners of three continents this summer and winter to study "grass-roots" medicine.

Far from U. S. metropolitan medical centers, the students, winners of Smith Kline & French Foreign Fellowships totaling some \$50,000, will study and give first-hand combat to diseases not commonly seen in America. Guided by physicians already practicing in remote areas, the Fellows will help to organize and maintain public health programs and—at the same time—gain valuable clinical experience under their proctors.

As "goodwill ambassadors" they also will represent American medical school education in areas where medicine often is practiced in primitive surroundings.

—From the Association of American Medical Colleges

Dr. Shelby G. Gamble of Okmulgee, Oklahoma, will assume his duties as Director of Medical Services for the Hot Springs Rehabilitation Center on August 1. The Center will occupy the former Army-Navy Hospital facility.

Dr. Gamble will direct the program of medical services to be rendered the disabled at the Center. His duties will also entail leadership in the development of policies and programs in the health and medical areas of the State-Federal program of vocational rehabilitation. He will be available for consultative services to public and private agencies concerned with rehabilitation of the disabled, and to medical and related professional schools.

He has been Medical Director of the Okmulgee, Oklahoma Rehabilitation Center since 1954, serving at the same time as Professor and Chairman of the Department of Physical Medicine, University of Oklahoma Medical School. Prior to that Dr. Gamble was Head, Department of Physical Medicine, Cleveland (Ohio) Clinic, for three years. Dr. Gamble is a Diplomate, American Board of Physical Medicine and Rehabilitation. He received his M.D. degree from the Nebraska College of Medicine in 1937, and served an internship in Immanuel Hospital, Omaha; a two-year residency in Chest Diseases at Michigan State Sanatorium; and three years in Internal Medicine at the Cleveland, Ohio, Clinic.

From the Association of American Medical Colleges: Indirect Costs to Medical Schools Of Separately Budgeted Research Expenditures

In 1957-58 expenditures for separately budgeted research in medical schools in this country amounted to \$105.5 million according to figures recently compiled by the National Science Foundation.** This sum is approximately two and one-half times greater than similar expenditures of \$45.3 million in 1953-54 and six times greater than the \$17.1 million spent for separately budgeted research in 1947-48. Only \$3.5 million was expended for this purpose in 1940-41.

A comparison for the years 1953-54 and 1957-58 of the total expenditures of medical schools for separately budgeted research, by source of support, and the respective percentage increases are shown in Table I.

Total indirect costs of separately budgeted research, as calculated by the "Blue Book Formula" amounted to \$22.5 million for the fiscal year 1957-58. This represents a dollar increase over the fiscal year 1953-54 of \$10.1 million (See Table II). Such indirect costs are absorbed partly by the sponsoring agencies and partly by the medical schools.

During the same period, the contribution of the medical schools to the indirect costs of separately budgeted research increased by \$3.4, i.e., from \$9.1 million in 1953-54 to \$12.5 million in 1957-58.

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TABLE I
EXPENDITURES OF U. S. MEDICAL SCHOOLS
FOR SEPARATELY BUDGETED RESEARCH BY SOURCE OF SUPPORT
1953-54 AND 1957-58

Source	(Amounts in Millions of Dollars)				
	Amounts		Percentage Distribution		Percentage Increase
	1953-54	1957-58	1953-54	1957-58	
N. I. H.	\$14.2	\$51.3	31.3%	48.6%	261%
Other Federal	8.6	13.6	18.8	12.9	58
Non-Federal	22.6	40.6	49.9	38.5	80
Totals	\$45.3	\$105.5	100.0%	100.0%	133%

Note: Detail may not add to totals due to rounding.
SOURCE: National Science Foundation.

TABLE II
SUPPORT OF MEDICAL SCHOOL INDIRECT COSTS
(Data Based on Bluebook Formula)

Source of Payments	(Amounts in Millions of Dollars)					
	Federal		Non-Federal		Totals	
	1953-54	1957-58	1953-54	1957-58	1953-54	1957-58
Sponsoring Agency.....	\$2.4*	\$7.6*	\$0.9	\$2.4	\$3.3	\$10.0
Medical Schools	5.1	6.6	4.0	5.9	9.1	12.5
Totals	\$7.5	\$14.2	\$4.9	\$8.3	\$12.4	\$22.5

*N. I. H. allowance for indirect costs increased during this period from 10%-15%.
SOURCE: National Science Foundation.

*Submitted by the Division of Operational Studies of the A.A.M.C., 2530 Ridge Ave., Evanston, Illinois.
**Data for this issue are based on reports prepared by the National Science Foundation. The data were collected for the Foundation by the Office of Education, Department of Health, Education & Welfare.

This means that in the more recent fiscal year, the medical schools themselves invested more of their own funds by \$2.5 million in defraying the indirect costs of separately budgeted research than did the sponsoring agencies.

During the fiscal year 1947-48, the over-all average of indirect costs of federally sponsored research for all 80 medical schools amounted to 25.1 per cent of the total research expenditures. From Table III, however, it can be seen that between schools the variation in the proportion of indirect costs to total research expenditures was considerable. Such a variation should suggest the necessity for obtaining full reimbursement of indirect

costs based on rates which are determined individually for each institution.

The present formula for estimating the contributions of sponsoring agencies to the indirect costs of separately budgeted research promises to become ever more burdensome to the medical schools as the predicted funds for research increase. The Bayne-Jones Report recommends an approximate three-fold increase in research funds by 1970. Should this sum for research materialize, and with no change in the present formula for allowances for indirect costs, by 1970 the medical schools would have to invest approximately \$25 million more of their own funds toward defraying indirect costs of research than they did in 1957-58. Within ten years,

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if the present trend persists, the indirect costs to the medical schools of research will represent a sum more than twice the

total amount for separately budgeted research expended by all medical schools in 1947-48.

TABLE III
"BLUE-BOOK RATE" OF INDIRECT COST
AS PERCENT OF RESEARCH OPERATING EXPENDITURES
U. S. MEDICAL SCHOOLS, FISCAL YEAR 1958

(Dollar Data in Thousands of Dollars)			
Size Category (Indirect Cost as Percent of Research Operating Expenditures)	No. of Medical Schools	Federally-Sponsored Research Operating Expenditures	
		Amount	Percent of Total
GRAND TOTAL.....	80	\$64,866	100.0%
Total.....	74	\$63,349	97.3%
Less than 18.0%	8	2,002	3.1
18.0 to 19.9	3	837	1.3
20.0 to 24.9	30	28,428	43.8
25.0 to 29.9	15	16,617	25.6
30.0 to 34.9	8	8,759	13.5
35.0 to 39.9	4	2,410	3.7
40.0 to 44.9	4	1,800	2.8
45.0 to 49.9	2	2,278	3.5
50.0 or more			
Overall Weighted Average Percent of Indirect Cost for all 80 Medical Schools	25.1		

NOTE: Detail may not add to totals due to rounding.

SOURCE: National Science Foundation, Office of Special Studies

From the Association of American Medical Colleges: The Medical Student, His Family And His Costs of Medical Education

The Datagrams, Vol. 1, No. 9, March, 1960, which discussed medical student finances indicated that the average cost to the student of 4 years of medical school, as experienced by the 1959 graduating class, was \$11,642 or \$2,911 per year. Recent findings in the same study indicate that the individual student and his family are paying the largest portion of these costs with only minor assistance from outside agencies. Gifts and loans from parents, relatives and/or in-laws and the student's or his wife's earnings provide 82 per cent of all financial resources available to the student. Agencies outside the family, such as the medical school, local banks, federal and state governments, provide the remaining 18 per cent of financial resources.

Special attention needs to be given to the facts that 16 per cent of the 1959 graduating class of medical students received no help from their families while 36 per cent received \$6,000 or more.

One of the basic factors which allows the medical students' families to give them financial help is the level of parental income. These data are compared with published census data on the U. S. average of white urban families in 1957.

The data indicate clearly that there is a much smaller proportion of medical students from lower income group families and, conversely, a much larger proportion of medical students from families with income of \$10,000 or more than the proportion of such families in the U. S. population. An integration of the data unequivocally demonstrates that lower income families simply cannot provide the amounts of money needed by the student

to pay for the costs of his medical education.

The data clearly indicate that there is a need for a positive program of financial assistance to medical students. First, if we are to reach our goal of increasing the number of physicians to meet the nation's health needs, we must draw upon a broader socio-economic base within the population. To do this, financial assistance is necessary. Second, current medical students in order to pay their bills must frequently engage in work which has nothing to do with medical education. Increased financial assistance would allow the elimination of the unproductive work which is currently being carried on at the expense of the fullest realization of the intended educational experience.

ANNOUNCEMENTS

Pain in the lower back, which doctors say is the most common complaint of the human race, and which now is being diagnosed electronically, will have the attention of delegates at two full sessions of the 3rd International Congress of Physical Medicine in Washington, D. C., August 21-26.

The electronic method, increasingly favored by physical medicine specialists, is called "electromyography". It helps to find the muscle fibers which are deviating from normal and causing backache and other pains. Diagnostic clues of value in prescribing treatment for common backache can be turned up by this type of examination.

Dr. Philippe Bauwens, London, England, will deliver the key address on electromyography at the Congress.

The Seminars on Hypnosis Foundation is having an advanced Seminar at Miami Beach, Florida, August 3-6. Dr. T. Duel Brown of Little Rock is a member of the panel on this Seminar.

The American Society of Clinical Hypnosis is having its third annual meeting at Miami Beach August 7-10. The headquarters for both these meetings will be the Deauville Hotel, Miami Beach.

The Tri-State Medical Assembly (Ark-La-Tex) will be held September 14, 1960 at the Confederate Memorial Medical Center, Shreveport, Louisiana.

PERSONAL AND NEWS ITEMS

Wells to Be New Director Of Medical Education

Dr. Benjamin B. Wells, director of medical education service for the Veterans Administration in Washington, D. C., has been appointed the VA's assistant chief medical director for research and education in medicine.

He succeeds Dr. John B. Barnwell, who retired March 17, 1960.

Dr. Wells, a former professor and dean of the University of Arkansas School of Medicine, has been with the VA since April, 1957, and has been the agency's director of medical education service since July, 1958.

The Association of State and Territorial Directors of Local Health Services held its regular 1960 biennial conference at the Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pennsylvania, May 17 through May 19, 1960. The Association is made up of public health physicians who are Directors of Local Health Services from each of the 50 states and territories. Dr. Edgar J. Easley of our State Health Department was elected Vice President of the Association for the next two years.

Dr. H. Fay H. Jones attended the Annual meeting of the American Urological Association at the Palmer House in Chicago from May 15 to May 20.

Dr. Anthony T. DePalma of Fayetteville was recently re-elected President of the Northwest Arkansas Mental Health Association.

Dr. Vida H. Gordon, 2616 Kavanaugh Boulevard, Little Rock has been certified in Subspecialty, Pediatric Allergy. She is the first to be so certified in Arkansas.

Dr. John L. Hudson has recently opened

his offices in Van Buren for the practice of medicine. He had practiced at Piggott before deciding to make Van Buren his home. Dr. Hudson received his M. D. from the University of Arkansas School of Medicine in 1955.

Dr. R. H. Harrison, coroner of Lafayette County, and Sheriff Buck Baker, were among the many Arkansas Pathologists and peace officers who attended the workshop on Forensic Pathology conducted by the Arkansas Medical School at Little Rock May 14. Dr. Edmund Fisher, State Medical Examiner for the State of Maryland, conducted the one day course.

The American Society of Geriatrics has announced the appointment of **Dr. James W. Case** of Walnut Ridge to fellowship in the society.

The sixth annual convention of Arkansas state Medical Assistants Society was held at the Grim Hotel in Texarkana in May. Albert C. Barr, assistant Intelligence Officer at the Red River Arsenal near Texarkana was the speaker at the general session on Sunday morning. New officers installed were **Mrs. Frances Reibe**, El Dorado, president; **Mrs. Helen Cameron**, El Dorado, Secretary; **Mrs. Matisheck**, president-elect.

Dr. E. H. Crawley who has been a practicing pediatrician in Little Rock since 1947, has moved with his family to Lansing, Michigan, where he will become chief of child health in the Michigan State Health Department. In Michigan Dr. Crawley will be working on the causes and prevention of premature child-birth and in the care of such babies, and with hospitals to improve the care of young patients. He will also be an instructor at the Michigan University School of Medicine.

Dr. William Martin Eisele was sworn in as a member of the Federal Registration Board, Hot Springs National Park, on June 6. This is an advisory and examining board, appointed by the Secretary of the Interior to advise the Superintendent concerning the use of the waters of Hot Springs National Park and to examine and approve doctors applying

for registration to prescribe the waters.

Dr. Eisele is the grandson of Mr. Martin A. Eisele who served as Superintendent of the Hot Springs Reservation from April 1, 1900 to March 31, 1907. In 1921, the name of the Reservation was changed to Hot Springs National Park. Dr. Eisele received his degree in Medicine from the University of Arkansas School of Medicine, and served in the U.S. Army Medical Corps. He took post-graduate work in surgery in St. Louis and New York.

Jon Wilkes, 16-year-old son of Mr. and Mrs. G. J. Wilkes, Little Rock, is being sponsored by the Pulaski County Medical Society to a meeting of junior engineers and scientists June 12-25 to be held at Clemson College, Clemson, S. C. Young Wilkes has won a 1st place in local and district science fairs and honorable mention at the state fair with a project in the medical science division.

The city of Booneville has put into motion the machinery to erect a hospital. An election has been called for June 21 to secure the electors' approval of a bond issue to finance construction and equipment of a municipally-owned hospital.

Low bids on a six-room addition to the Yell County Hospital totaled \$25,684 and have been accepted by the County and the Hospital Board.

Dr. Sam J. Kuykendall of Little Rock attended the annual three day meeting of the American Association for Thoracic Surgery which was held at Miami Beach, Florida in May.

Dr. Morris M. Henry of Fort Smith successfully completed examinations in San Francisco in May of this year and is now a Diplomate of the American Board of Ophthalmology. Dr. Henry is currently with the military service in Europe.

Among those receiving their medical degrees from the University of Arkansas Medical School this past June were the following: **Dr. Curtis E. (Buddy) Ripley** of Warren, who will intern at the Baptist State Hospital, Little Rock; **Dr. Russell Albright** of Clarksville, who will intern at St. Vincent's Hospital; **Dr. Wil-**

liam C. Head of Truman; **Dr. Richard Franklin Plant** of Clarendon who will serve his internship at the United States Naval Hospital in San Diego, California; and **Dr. Judson Hout, Jr.** of Newport who will intern at Hillcrest Hospital, Tulsa, Oklahoma.

Dr. Ivan H. Box, formerly of Springdale having just completed a four year tour in the Army, has become associated with **Dr. Austin Smith** of Huntsville, Arkansas. Dr. Box graduated from the University of Arkansas School of Medicine in 1956.

The guest speaker for the Booneville Lion's Club on June 2 was **Dr. Adnan Ekmekcioglu**, member of the staff of Arkansas Tuberculosis Sanatorium. Dr. Ekmekcioglu is a native of Turkey and has been a member of the Sanatorium staff for some months.

Dr. Carroll Shukers II, who has been medical director and physician at the Perryville Community Health Clinic since August, 1959, has announced his resignation effective June 1. A replacement doctor is being sought, and in the meantime temporary arrangements have been made for **Dr. Nils Pehrson** of Little Rock to spend two weeks during June at the clinic.

Dr. Willard H. Pruitt, Camden, discussed the need for complete medical and legal investigation in all cases of accidental and unexplained death at the May meeting of the Union County Medical Assistant's Society.

Dr. W. J. Butt of Fayetteville was the guest speaker for the meeting in Springdale of the Medical Assistants in May. He spoke on the experiences of a doctor engaged in general practice.

Dr. H. L. Klemme of Siloam Springs has closed his office and has accepted a fellowship with the Menninger Foundation of Topeka, Kansas, in the field of psychiatry.

Harrison members of the American Medical Technologists, National Registry were host to the Arkansas Society of the

AMT in May. **Ralph Haskins, M. T.** of Little Rock, is the president and **Wayne Smith, M. T.** of Harrison is Secretary-treasurer.

Proceedings of Societies

The Lafayette County Medical Society is proceeding with a petition to be voted on in the coming November election, to cut the operating millage for the Lafayette County Memorial Hospital from one mill to one-half mill. The millage cut has been approved by the Hospital board, but by law this cut cannot be effective except in the same manner in which it was imposed; that is, in this instance by a vote at the General Election.

The First District of the Arkansas Medical Society held its meeting in West Memphis on May 26. Officers elected were Dr. Norman K. Smith, Pocahontas, president, Dr. Horace C. Barnett, Jonesboro, vice president and Dr. J. H. McCurry, Cash, secretary.

Those on the program for the day included Mr. Cecil Kelly with the Internal Revenue Service who talked on "The Doctor's Income Tax", Dr. Arturo Aballi, assistant professor of Pediatrics, University of Tennessee College of Medicine who talked on "Acute Emergencies in the New-born Period". Dr. John Riggins, Associate Dean of the University of Arkansas School of Medicine spoke on "Changing Concepts of Medical Education."

The 9th Councillor Medical District held its semi-annual meeting on June 3 at the Springdale Country Club with golf and bridge tournaments during the afternoon as part of the entertainment. A very interesting scientific program was presented by Dr. Martin of Fayetteville on the "Painful Shoulder Syndrome".

The Independence County Medical Society met at the Marvin Hotel in Batesville for the May meeting. Following dinner the group adjourned to the home of Dr. and Mrs. Paul Gray where a scientific meet-

ing featuring a film shown by Mr. Daniel Boone Moore, Jr., from the Massengill Company was held.

From the AMA report on Actions of the House of Delegates:

Health care for the aged, pharmaceutical issues, occupational health programs, relations with allied health groups and relations with the National Foundation were among the major subjects involved in policy actions by the House of Delegates at the American Medical Association's 109th annual meeting held June 13-17 in Miami Beach.

The House of Delegates adopted the following statement as official policy of the American Medical Association:

"Personal medical care is primarily the responsibility of the individual. When he is unable to provide this care for himself, the responsibility should properly pass to his family, the community, the county, the state, and only when all these fail, to the federal government, and then only in conjunction with the other levels of government, in the above order. The determination of medical need should be made by a physician and the determination of eligibility should be made at the local level with local administration and control. The principle of freedom of choice should be preserved. The use of tax funds under the above conditions to pay for such care, whether through the purchase of health insurance or by direct payment, provided local option is assured, is inherent in this concept and is not inconsistent with previous actions of the House of Delegates of the American Medical Association."

Among other actions taken by the House was to direct the Board of Trustees to request the Council on Drugs and other appropriate Association councils and committees "to study the pharmaceutical field in its relationship to medicine and the public and to submit an objective appraisal to the House of Delegates in June, 1961." It was pointed out that the services of the pharmaceutical industry are so vital to the public and to the medical profession that an objective study should be made.

In approving the revised guides for occupational health programs, the House

also accepted a suggestion that the A.M.A. Council on Occupational Health undertake a project to study and encourage the employment of the physically handicapped. It strongly reaffirmed its support of the Blue Shield concept in voluntary health insurance and approved specific recommendations concerning A.M.A. Blue Shield relationships. Individual members of the Association were urged to take a greater interest and more active part in public affairs on all levels; and it reaffirmed its opposition to compulsory inclusion of physicians under Title II of the Social Security Act.

* * *

Speakers for the Arkansas Academy regional post graduate medical seminar held in Clarksville May 12, were Walter O'Neal of Little Rock, Dr. J. C. Melby of Little Rock and Dr. Arthur H. Stein, Jr., of St. Louis, Missouri. Chairmen of local arrangements for the meeting held at the Holy Redeemer school were Doctors J. M. Kolb, Guy Shrigley, Jr. and Robert Manley.

Arkansas Breakfast

AMA Meeting, Miami, Florida

June 13th, 1960

The Arkansas Breakfast held at the Americana Hotel in Miami Beach at the recent A.M.A. convention was an outstanding success.

The Arkansas Medical Society is host to the delegates and officers of the American Medical Association and other invited guests at a breakfast at each June meeting of the A.M.A. This year 289 persons attended. Master of Ceremonies was Arkansas Medical Society president J. J. Monfort. R. B. Robins introduced the guest speaker, Mr. Chester Lauck of "Lum and Abner" fame. Mr. Lauck made a serious talk which was so well received that it was reproduced and 300 copies were distributed at a later House of Delegates meeting.

Pottery mugs labelled "Arkansas Mug", obtained by Dr. Robins as a gift, were given to everyone attending the breakfast. Imitation Arkansas diamonds and literature on the State were placed at each seat.

The guests were generous in their praise of the event.



A general view of the Arkansas Breakfast in Miami Beach June 13th.

Attending from Arkansas were Dr. Robins, Dr. and Mrs. Monfort, Dr. and Mrs. C. C. Long, Dr. and Mrs. J. W.

Kennedy, Dr. Richardson, Dr. and Mrs. D. W. Goldstein, Dr. McCurry, Mrs. Mason Lawson, and Mrs. M. H. Wilmoth.

Answer to What Is Your Diagnosis?

BONES— HAND-SCHULLER-CHRISTIAN DISEASE

This 22 month old white female first developed a severe dermatologic disorder at 4 to 6 weeks age, resembling infantile eczema. In the past 6 months the patient had developed polydipsia and polyuria and had been noted to drink over a gallon of water a day. The child was found to have a markedly deformed head, bulging exophthalmus and severe skin rash. She was constantly wet and thirsty. She had a scaling erythematous macular rash scattered over the entire body. The skull was asymmetrical with large cystic areas under the skin. The child was found to be refractory to Pitressin. A course of nitrogen mustard therapy was ineffective. Her course was progressively downhill and she expired on the 10th hospital day.

Laboratory data revealed hemoglobin

to be 8.28, NPN-43, ear culture-proteus resistant to all antibiotics.

Films reveal numerous clearly defined irregular areas of destruction involving the entire skull, almost the entire left temporal bone, and the lateral aspect of the petrous pyramid is destroyed. The sella also appears to be destroyed and the floor of the sphenoid sinus is destroyed. There is probably also destruction of the left orbital wall. There are areas of obstruction in the left body and ramus of the mandible.

CORRECTION

In the proceedings of the Annual Session as published in the June issue of the Journal of the Arkansas Medical Society it was erroneously stated that the House of Delegates approved the nomination of Dr. Garland Murphy, Jr., of El Dorado, for the Arkansas State Board of Health. Dr. Murphy was elected to succeed himself on the Arkansas State Medical Board.

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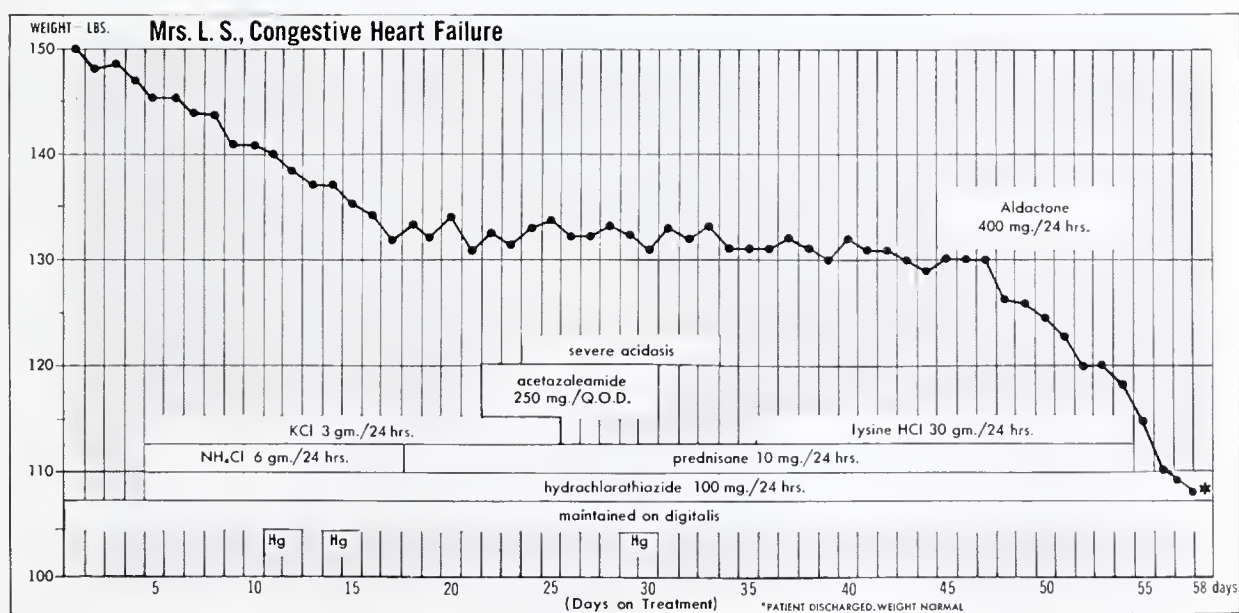
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New Members . . .

Dr. James R. Bearden is a new member of the Pulaski County Medical Society. He is a native of Magnolia, Arkansas, and received his preliminary education at Hendrix College at Conway. Dr. Bearden's M.D. degree was obtained from the University of Arkansas Medical School in 1954. He interned at Denver General Hospital 1954-55 and was in the U.S. Army from 1955 to 1957. Dr. Bearden is a Radiologist at the Arkansas Baptist Hospital.

A new member of the Pope-Yell County Medical Society is **Dr. William L. McNamara**. He is a native of Vienna, South Dakota, and received his preliminary education from the South Dakota State College. His M.D. degree was obtained in 1921 at the Tulane University Medical School in New Orleans, Louisiana. Dr. McNamara practiced for 20 years in Chicago, Illinois, before moving to Russellville three years ago.

Dr. Carney Fitzgibbon is a new member of the Pulaski County Medical Society. He is a native of Little Rock and received his preliminary education from the Ouachita Baptist College in Arkadelphia from which he received a B. S. degree. His M.D. degree was obtained in 1958 at the University of Arkansas School of Medicine. Dr. Fitzgibbon is now practicing at the U.S. Naval Station, Long Beach, California.

Woman's Auxiliary

The Auxiliary to the Independence County Medical Society met with the Medical Society in May for the final

meeting of the year. This was a dinner meeting at the Marvin Hotel, Batesville, with Mrs. Alfred Hathcock and Mrs. R. L. Calaway hostesses. Following dinner both groups adjourned to the home of Dr. and Mrs. Paul Gray, where the Auxiliary installed officers for the coming year. The incoming officers are as follows: President, Mrs. Glen Keller, Mountain View; vice president, Mrs. Jimmie E. Lytle; secretary, Mrs. Charles Taylor; and treasurer, Mrs. Chaney Taylor. Mrs. Paul Gray was the installing officer.

Book Reviews

CARCINOGENESIS. CIBA Foundation Symposium. Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., BCh., and Maeve O'Connor, B.A. Illustrated, PP 325, 1959 Little, Brown & Co., Boston. \$9.50

This symposium is mainly of interest to research in cancer. On the other hand, the style is informative and easy to read. Surgeons and internists interested in the general problem of cancer can obtain much from reading this text. Some of the chapters deal with chemical substances, indicated as carcinogenic agents. There are interesting discussions on the immunological aspects of cancer; the association of viruses with cancer is also discussed. This book is of great interest to the student of cancer, but is of limited interest to the average physician.

SURGERY OF THE FOOT, by Henri L. DuVries, M.D., Clinical Instructor in Surgery, Chicago Medical School; Attending Surgeon, Columbus Hospital, Mother Cabrini Hospital, and Frank Cuneo Hospital; Chairman, Department of Surgery, Illinois College of Chiropody and Foot Surgery, Chicago. Illustrated, PP 494, 1959. The C. V. Mosby Company, St. Louis, Missouri

This text is allocated to diseases of the foot and, as such, is principally of interest to the orthopedic surgeon. It has many facets which are of interest to the general surgeon and the medical student. It deals not alone with major diseases of the foot but also minor ones. It is very well illustrated. The section on diseases of the nails is well handled and is, of course, of interest to almost every practitioner. This book is well written and seems to be quite inclusive.

FEATURES



Mr. Chester Lauck, Vice President, Continental Oil Company, was the speaker at the Arkansas Breakfast given for the AMA House of Delegates, officers and guests in Miami Beach.



R. B. Robins of Camden, a member of the AMA Board of Trustees and J. J. Monfort, President of the Arkansas Medical Society demonstrate the "Arkansas Mugs" given as souvenirs of the Arkansas Breakfast at the American Medical Association meeting in Miami Beach June 13th.

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Closed Spinal Cord Injuries*

WILLIAM S. COXE, M.D.**

Until recent times the prognosis of the patients with transverse lesions of the spinal cord, following trauma, was considered as extremely bleak. Indeed, such patients usually remained fully incapacitated for life or succumbed, after a short time, from the ravages of urinary sepsis or other complications of generalized debility. In recent years, particularly following World War II, such opinions are no longer held to be valid, due in large part to the advent of antibiotics in addition to other general measures which have undoubtedly made a tremendous difference.

Even so, definitive surgical treatment in most instances of spinal cord trauma is rarely productive of any significant recovery of function. To this time there is no uniformity of opinion regarding the specific indications for surgical intervention upon injuries to the cord. In the majority of cases, therefore, the return to useful and productive lives is largely dependent upon extensive nursing care and rehabilitation measures.

In most instances of cord damage following trauma there is an accompanying fracture and dislocation of the surrounding vertebrae, although much damage may occur without a demonstrable deformity of the spine. Most of these vertebral deformations are produced by a mechanical force transmitted from a point of distant impact, such as a diving accident producing a cervical spine dislocation, or injuries resulting in violent flexion or hyperextension of the trunk which produce a significant number of

fracture dislocations at the lumbo-dorsal level. The most frequent sites of injury are the fifth, sixth, and seventh cervical and the twelfth thoracic and first lumbar vertebrae. These sites are in all probability more prone to dislocation because of the increased mobility of the vertebral column at these locations.

In the discussion that follows, the problems related to these various areas will be considered briefly. Also, important features of medical care which are common to injuries at all sites will be dealt with. Before proceeding, a brief review of a few anatomical and pathophysiological points would seem pertinent.

In the adult, the spinal cord usually terminates at the level of the first lumbar vertebra, the remainder of the dural sac being occupied by the sensory and motor roots, or cauda equina. Therefore, injury of the lumbar region will produce root rather than cord damage, although both elements may be involved in a lesion at T12-L1. Many spinal segments are crowded into the distal portion of the conus medullaris so that all of the lower lumbar and sacral segments underlie this level. Injury in this region, therefore, does not allow reflex behavior characteristic of higher cord injury. Immediately following cord injury, a group of signs develop which is popularly referred to as spinal shock. There is loss of bowel and bladder function, loss of modalities of sensation, total paralysis below the level of the lesion, and absence of deep tendon reflexes. In the region of the cauda equina, this picture may be permanent except for the bladder. If over distention of the bladder is prevented by prompt catheter drainage, irreversible damage to

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Presented at the Union County Medical Society's Symposium on Trauma.

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bladder muscles is avoided so that automatic bladder function may be attained with the help of the Crede maneuver.

Following injuries to higher levels of the cord, flaccid paraplegia resulting from spinal shock is usually followed by spastic paralysis. About two to three weeks after the injury, a painful stimulus applied to the sole of the foot results in extension of the great toe. In the ensuing days, the deep tendon reflexes return and with the passage of time, they may become hyperactive. The bladder may develop an exaggerated response to stretch, resulting in a small bladder capacity with frequent and ineffective micturition. Later, light cutaneous or painful stimulation of the thighs or legs may result in pronounced flexion of the leg associated with urination and defecation known as the "mass reflex", though this phenomenon is quite rare with the great improvement in general care.

Knowledge of a few neuro-anatomical fundamentals usually enables one to localize a cord lesion with great accuracy. There are three major ascending sensory systems and one major descending motor tract. Pain and temperature fibers cross in the cord almost immediately and travel cephalad in the ventral half of the cord. Touch sensation is conveyed over a more diffuse distribution, some crossing and ascending on the ventral side, others coursing uncrossed in the posterior columns. This fact accounts for the occasional preservation of touch unless there is complete functional transection. Proprioceptive and vibratory sensations ascend uncrossed in the dorsal columns. The motor fibers, of course, cross in the lower medulla and stream downward in the dorso-lateral half of the cord. One should also remember that the fourth cervical segment innervates the diaphragm, that the fourth cervical and second dorsal dermatomes are contiguous on the anterior chest wall, and that the fifth cervical through part of the second thoracic dermatomes are distributed entirely to the upper extremity.

MANAGEMENT OF PATIENTS WITH SPINAL CORD INJURIES

In transporting patients with spinal injuries, movement of the involved re-

gions should be carefully avoided. If possible, the patient should not be moved more than once after reaching the hospital since the initial treatment, x-rays, surgical treatment, and subsequent care all may be carried out upon a Foster or Stryker frame. It is, of course, obvious that not only should the anatomical location of the spinal injury be established, but the presence or absence of other associated injuries should be noted which might require urgent treatment. In cervical injuries, the airway may be embarrassed, the patient being unable to cough up or clear secretions. These should be aspirated immediately and a tracheostomy performed if there is the slightest indication. A catheter should be inserted into the bladder as soon as possible. Next, x-rays of the cervical spine should be taken with careful immobilization of the head and neck. It is our feeling that a physician should be in attendance at all times to supervise the movement and positioning of the patient. Stereoscopic views of the cervical spine may be of value in determining the possibility of cord compression by a laminar fragment, if the fracture dislocation is not obvious. Lumbar puncture with cuff manometrics is useful in estimating the degree of cord compression or swelling, but its limitation in this regard should be recognized.

DEFINITIVE TREATMENT

Experimental evidence derived from several laboratories indicates that decompression of an injured or compressed cord may be very beneficial if performed within a few hours. This is rarely possible in practice and experience tends to confirm a poor recovery following such injuries. Decompressive laminectomy in patients with complete motor and sensory paralysis has rarely resulted in significant functional recovery. However, in a few patients in whom the neurological lesion was incomplete, almost complete return of function has been seen.

Cervical Lesions

In cervical cord trauma with fracture dislocation, we feel that skeletal traction is the treatment of choice. The patient is taken from the x-ray department following the confirmation of the lesion, and

Crutchfield or Vincke tongs applied to the skull with 15 or 20 pounds of weight attached. X-rays are repeated, and if the dislocation is still present, 10 pounds of weight are added, though at times up to 40 or 50 pounds of weight may be used before effecting reduction. Spasm of the cervical spinal muscles which may offer considerable resistance to this, can be partially relieved by analgesics or the infiltration of procaine. Once the reduction is accomplished, the patient may be maintained with 8 to 10 pounds of traction, usually for six weeks. If there is significant neurological deficit, the patient is kept on a Foster or Stryker frame during this period. If realignment of the dislocated vertebrae is not accomplished by skeletal traction, laminectomy may be resorted to, to unlock the facets surgically. The other indications which we have used for surgical intervention in the cervical region are compromise of the spinal canal by bony fragments or extrusion of an intervertebral disc.

A special case of cervical spine dislocation should be mentioned and that is dislocation of the first and second cervical vertebrae with or without dislocation of the odontoid process. Many of these injuries will never come to the attention of any doctor because the lesion may not be compatible with life if a neurological injury has occurred. Many of them complain only of pain and stiffness in the neck or occasionally, paresthesias extending into the arms or legs. Late neurological complications may occur particularly if an unstable union occurs. To prevent this, skeletal traction may be used followed by immobilization in a body cast. However, some surgeons advocate early spinal fusion in order to obviate the necessity of prolonged immobilization.

Dorsal and Lumbar Lesions

In dorsal and lumbar regions, early treatment usually consists of decompressive laminectomy followed by a period of six weeks on a frame, or if surgery is omitted, the maintenance of the patient in mild hyperextension for a similar period of time. In general, the indications for surgery in most regions of the spine are considered to be the following: 1) radiological evidence of bony compression

of the spinal canal, 2) progressively developing neurological deficit, 3) failure of rapid progressive neurological improvement when there is a complete lesion, but no indication of fracture or dislocation on x-ray, 4) an incomplete neurological lesion with a complete block at the time of lumbar puncture, 5) an incomplete injury in which there is failure of neurological improvement. Nevertheless, some patients with complete lesions are explored if they are seen early, in the hope that the patient may be given the benefit of the doubt, even though the prognosis is dismal. Yet, we have not seen any recovery of function following operation in completely paralyzed patients with thoracic fractures accompanied by lateral dislocation of the vertebral bodies. Similar lesions at the thoraco-lumbar junction or in the lumbar spine offer more hope of recovery, and practically all such patients undergo laminectomy as soon after injury as possible. It is difficult to state in patients with incomplete neurological lesions, whether or not surgical decompression was the cause of the improvement or whether such improvement would have occurred anyway.

Recently, a 47 year old farmer was admitted to the hospital several hours after being pinned under his tractor. He was immediately paralyzed and anesthetic below the umbilicus. At the time of admission, he had recovered slight pin prick sensation, yet his motor loss remained complete. He had hypalgesia and hypesthesia below T12. X-rays revealed a compression fracture of L1 with posterolateral dislocation, the right inferior facet of T12 encroaching upon the spinal cord. Following surgery, where the dura was found to be sharply compressed by the facet, he regained bladder function and both deep and cutaneous sensation. There has also been progressive recovery of motor function. It is difficult to believe that this man would have improved otherwise.

The question of whether one should open the dura at the time of decompressive laminectomy remains unsettled. There are those who fear that the edematous cord may herniate through the dural

opening, and there are others who recommend that dorsal myelotomy be performed to relieve edema. It is our practice to open the dura, inspect the cord, and if there is evidence of significant swelling, exploration for the presence of an intramedullary clot is performed with needle and syringe. This briefly, constitutes our feeling regarding the early handling of spinal cord injuries in most regions.

EARLY MEDICAL CARE

Of equal or perhaps greater importance than the surgical treatment of patients with spinal cord injuries, is expert general medical care. A detailed discussion is far beyond the scope of this paper, but brief mention will be made of salient points, including skin and bladder care, nutrition, morale, and physical therapy.

The combination of immobility and absence of sensation predisposes the patient to one of the most dreaded complications, that of decubitus ulcer formation. There is very little excuse for the development of these ulcers if proper attention to skin care is intensively maintained. This requires no little effort on the part of the physician and nursing staff. No period of relaxed effort should be tolerated, since irreversible changes may occur within a few hours in the poorly managed patient. The Foster and Stryker frames have been of invaluable service in coping with this problem. The sheets covering the frame or bed should be smooth and well powdered to avoid pressure points and abrasions. Bony prominences should be padded with pillows or other devices. If this insidious condition should develop with resulting infection and abscess formation, it should be adequately debrided, and if it appears possible, allowed to heal from the bottom up. It may be necessary to rotate skin flaps or utilize a skin graft if a protracted period of healing seems to be in the offing.

In both cord and cauda equina lesions it may be possible, ultimately, to dispense with catheter drainage. This can be achieved only through the happy combination of dedicated attendants and the maintenance of the interest and effort of the patient. With cord involvement, the bladder behaves as a spastic somatic mus-

cle. This is paresis and an exaggerated response to stretch. Capacity is small and emptying effort may be weak. These patients may benefit from transurethral resection of the bladder neck to effect more complete emptying. Conversion of a small capacity spastic bladder to an automatic bladder of larger capacity may be accomplished occasionally by sacral neurotomy or sacral nerve block. As mentioned earlier, patients with cauda equina lesions, who have totally denervated bladders, may develop automatic control and empty the bladder with the help of abdominal compression. None of these things may be accomplished however, if the bladder has been irreversibly damaged by being overly distended and infected. It follows then, that a retention catheter is of utmost importance in the early period of care. Systems of drainage are variable, but the most ideal method is the use of tidal drainage, advocated by Munro. However, this may be fraught with difficulties precluding efficient management by ward personnel, and it may be impracticable to use. Intermittent drainage of the bladder with aseptic irrigation 2 or 3 times daily is another useful method. It is our practice to insert a new catheter once a week and to use urinary chemotherapeutic agents when indicated. Also a very high fluid intake is of great importance in the prevention of sepsis, as well as calculus formation.

Maintenance of adequate nutrition is of the greatest importance as the immobilized patient quickly loses weight. A high protein, high caloric diet is essential, with determination, at intervals, of the hemoglobin and serum protein levels. Whole blood transfusions should be given if there is a decline in hemoglobin levels, as the problems of decubitus ulcer formation, and urinary sepsis may otherwise become overwhelming.

Of greatest importance throughout the hospital stay of these patients is attention to their morale. The realization of the presence of permanent limb paralysis, impaired bladder, bowel, and sexual function is one of the most demoralizing situations that can be experienced. Although the method of acquainting the patient with his problem will vary according to

his personality and other factors, he must, quite early, realize the future he must face. An adequate and effective rehabilitation program will be impossible unless one has his unqualified co-operation and enthusiasm. Description of physical rehabilitation programs is not within the scope of this discussion, but we do wish to stress the importance of instituting this care quite early following the injury and the maintenance of a vigorous and progressive program. Today there are numerous paraplegic and some quadriplegic patients who are usefully, happily, and gainfully employed. Although the remarkable results that can be achieved with this sort of therapy are apparent to all, facilities throughout the country, in general, are still lacking, particularly for the civilian population.

Two other problems which may require the attention of the physician sometime after the injury are those of muscle spasm and pain. Muscle spasms are a manifestation of isolated, uninhibited spinal cord function. Severe contractures may result associated with multiple decubitus formation, due to constant movement of bony parts against the bed or opposite extremity. Spasms appear to occur more frequently and to be more

severe in the presence of infection and malnutrition, so that a vicious circle is begun, one aggravating the other. Early surgical treatment is advocated to preclude this chain of events if one is sure that all hope of return of function has passed. Anterior rhizotomy, from T10 through S1, or below, has proved most satisfactory for permanent relief of spasm, but subarachnoid alcohol injection and corpectomy have also been effective.

Lastly, the problem of pain should receive brief mention. Though pain of minor significance may occur in a majority of patients with spinal cord trauma, severe persistent pain is relatively infrequent. It occurs far more frequently following injuries to the conus or cauda equina than from injuries to higher levels. Though many types of pain have been described, most improve with time and effective rehabilitation. Many surgical procedures have been tried at various times, but by far the most effective one for severe, unremitting pain caused by low injuries, has been high dorsal anterior spinothalamic tract section. In no instance should one resort to narcotics, since they are rarely of any lasting help and usually produce addiction.

Management of Arterial Injuries In Civilian Life*

JAMES M. STOKES, M.D.**

Until 1900 only nine successful arterial repairs had been reported in this country. Eck reported the first successful arterial suture in 1879. The advances in the treatment of acute arterial injury since 1900 have been intermittent with added impetus related chronologically to war wounds. The infrequency of arterial injury in civilian life has limited the experience of any one physician to relatively few patients. However, the arterial injury offers an opportunity for the preservation of life and extremities which is not exceeded by the more complex lesions of congenital and arteriosclerotic vascular disease. The probability that an acute arterial injury will confront the physician in any community without forewarning emphasizes the need for knowledge of the appropriate steps in the immediate care of these wounds. Moreover the treatment of the acute arterial injury cannot be postponed without the risk of irreversible loss of extremities or severe functional impairment. Analysis of the results of arterial repair in World War II and the Korean conflict shows a direct correlation of failure rate with the time lag between injury and repair. A review of acute arterial injuries treated in civilian hospitals suggests a need for greater effort if the results are to be equal to those obtained during the past war. The facilities available in most hospitals are adequate for the repair of the vast majority of arterial wounds.

The largest collected series of arterial injuries have been those arising from major conflicts. Methods of management of arterial injuries have originated from the results of these experiences for the most part. It seems worthwhile to review briefly the distribution of arteries injured, the methods, and the results of treatment of those arterial wounds occur-

ring during war and those incurred in civilian life.

The following summary of arterial injuries of war is a combination of two groups of patients totaling 298 reported by Hughes (1) and by Spencer (5) both originating from the Korean War. The civilian series are a composite of Morris's (3) study from Houston and Sinkler's (4) from St. Louis City Hospital No. 2, summarizing the treatment of arterial injuries in 119 patients in two large city hospitals. Table I shows the distribution of individual arterial wounds from war and civilian injury. Table II indicates the method of repair used in the arterial injury sustained in both situations. The similarities in the distribution and the results of treatment of arterial wounds are somewhat surprising considering the difference in the conditions and types of war wounds and civilian injuries. Of the totals in the war and civilian series, injuries to the major arteries show approximately the same percentage of successful results of individual arterial repairs and of the entire series total. The increased incidence of grafting procedures in war wounds is one indication of the massive injuries sustained by high-velocity missiles and other explosives. Table III illustrates the improvement in results of treatment in the hospital over two 3 year periods (3). During the second 3 year period an energetic effort was made to treat arterial wounds promptly. Since the similarities of the distribution and methods between the war and civilian series of arterial injuries is apparent, the results should be as good or better in the civilian patients of comparable age groups, if aggressive surgical management is effectively applied. It is conceivable that such improvement is attainable in many community hospitals.

The following patients are presented to illustrate representative types of arterial injury admitted to the Barnes and St.

*Presented at the Union County Medical Society's Symposium on Trauma.

**From the Department of Surgery, Washington University School of Medicine, Saint Louis, Missouri.

Louis City Hospital during the past two years.

CASE REPORTS

1. E. U., a housewife, age 37, was injured in an automobile accident in 1957, and admitted with a diagnosis of fracture of the femur. After application of a long-leg cast the foot was noted to be pale and cold. Upon removal of the cast, no palpable pulse could be demonstrated below the femoral. Femoral arteriogram shows interruption of the femoral artery near the fracture without shortening of the artery. At exploration the artery was found to be completely transected. Primary anastomosis was performed.

2. G. C., a businessman, age 57, struck his leg against a tree while riding in a golf cart. Femoral arteriogram shows interruption of the contrast material in the popliteal artery with extensive soft tissue swelling.

3. A. R., a 60 year old man, sustained a highly comminuted femoral fracture. Two weeks after injury the patient developed evidence of cardiac failure. A loud bruit was audible over the lower femur. Arteriogram shows an arteriovenous fistula secondary to the injury.

4. W. A., a 38 year old man, who was treated for a fracture of the tibia with closed reduction, developed pain in the leg one month after treatment. A pulsating mass in the popliteal space was evident after removal of the cast. There was pooling of the contrast material in a false aneurysm due to avulsion of the anterior tibial artery at the interosseous membrane. The anterior tibial artery was ligated and the popliteal artery was repaired.

5. I. R., a 37 year old man, was admitted to Barnes Hospital after an automobile accident, which caused fracture of the pelvic bones and rupture of the right common femoral artery. In addition, the rectum was lacerated with contamination of the peritoneal cavity. The femoral artery was repaired by primary suture. Colostomy was performed and drainage was instituted on the contralateral side of the wound after coverage of the artery. This patient represents result of arterial trauma complicated by fracture and injury to the colon. Successful healing of the artery occurred despite these compli-

cating wounds and the extremity survived with good blood supply.

6. C. W., a 41 year old man, was admitted for treatment of a 30 caliber gunshot wound of the right groin. Exploration of the wound showed a transection of the superficial femoral artery. The loss of arterial length necessitated repair with an autogenous vein graft.

These patients represent varying types of arterial wounds sustained in civilian life and while the diffuseness of the injury is frequently less than those occurring in war, the interference with arterial flow in particular vessels is the same. From a review of these cases and the remainder of series of arterial injuries in St. Louis civilian hospitals several concepts in the management of patients with wounds near major vascular compartments deserve emphasis.

EARLY RECOGNITION OF ARTERIAL FLOW DEFICIT

The criteria of the pale, pulseless, and paralyzed extremity described by Griffiths (6) as indication for surgical exploration should be shortened to exclude paralysis which frequently signifies irreversible necrosis of the tissue. The practice of prolonged observation of patient with arterial ischemia is not tenable unless continuity of the major vessel can be established by arteriography or immediate response to sympathectomy agents. Immediate surgical exploration of the artery is mandatory unless effective circulation is quickly effected. The presence of a large hematoma or wound near a major artery is in itself an indication for surgical intervention since delayed bleeding, abscess formation, false aneurysm and the possibility of arteriovenous fistula are known to follow such injuries. Sinkler (4) reports significant decrease in the number of arteriovenous fistulas at St. Louis City Hospital No. 2, since a policy of exploring all wounds near major vessels has been established.

Arterial ischemia associated with non-penetrating injuries of the soft tissues and closed fractures has been labeled "arterial stupor" by some authors. Exposure of the artery shows intense constriction which may be segmented or extended to involve the branches. Vasoplegics and topical anesthetic agents will sometimes

result in restoration of pulse. Kinmonth (9) recommends—2.5 per cent papaverine application to the exposed artery. If arterial flow through the involved segment cannot be re-established, arteriectomy or replacement with an arterial substitute is necessary. Examination of such arterial segments removed from war wounds have shown microscopic evidence of injury in the wall though no thrombus or gross change was apparent at operation.

The occurrence of acute ischemia of the extremities after fractures near the elbow joints is commonly described as Volkmann's ischemic contracture. A similar injury also occurs in the lower extremity. Lipscomb (8) and other authors deserve credit for re-emphasizing the fact that the ischemia is not always related to external pressure, casts, or reduction in many instances. The finding of severe arterial spasm extending distal to the site of trauma and its relief by segmental arteriectomy or topical vasoplegics support the concept that organic obstruction by pressure is not the sole causative factor. Immediate fasciotomy and exploration of the injured artery is warranted in patients with circulatory impairment following blunt trauma, fractures and dislocations.

The preceding abstracts and arteriograms of fractures of the lower extremities demonstrate clearly some organic injuries of arteries which may be overlooked unless arteriography and exploration are performed whenever arterial ischemia develops following fracture. Even if the extremity survives the late sequela of impaired function, secondary to arterial injuries, are serious enough to justify early definitive intervention.

SURGICAL CONSIDERATION

If surgical intervention is necessary, the vascular compartment should be approached through classic incisions rather than utilizing the wound. Experience in the Korean conflict demonstrated the following advantages of this approach: a) proximal control if the artery is obtained, b) the blood loss from debridement of the wound is reduced by proximal control and c) the site of injury to the vessel may then be exposed without undue haste and the needless sacrifice of collaterals.

The conservation of the collateral arteries is of great importance and if primary reconstruction cannot be obtained without their division, an arterial substitute should be used.

Many excellent descriptions of arterial suture techniques are available (7). A simple everting continuous "baseball" suture has proven effective in most repairs.

Primary reanastomosis can frequently be obtained in the extremities by proper positioning and flexion of extremities. If this is inadequate, autogenous veins, homologous arteries, or synthetic tubes can be inserted to restore continuity. Autogenous veins are preferred in the extremities by some authors because the pressure relationships are believed less likely to result in aneurysm formation than in the larger arteries of the abdomen. Larger arteries and the aorta can be successfully replaced with synthetic fiber tubes. The improvement resulting from surgical treatment of war injuries is well documented and should encourage efforts to achieve similar results in civilian injuries.

The management of arterial wounds in civilian life is considered in relation to the results achieved during the recent military conflicts, and opportunities for the greater application of surgical correction of arterial trauma in civilian practice is reviewed with illustrative case abstracts.

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Review of Act No. 3 Cases Admitted To
Arkansas State Hospital
Calendar Years 1956, 1957, 1958, 1959

ROBERT G. CARNAHAN, M. D.*

During the calendar years of 1956 through 1959, there were 835 Act No. 3 cases sent to the Arkansas State Hospital at Little Rock. This large and, unfortunately, increasing number of court cases demand our careful consideration, as well as our constant attention in an effort to more effectively and more promptly deal with the problem.

Act No. 3 of 1937 State Legislature was enacted to allow cases prosecuted in circuit courts for criminal acts to be sent to the State Hospital for thirty days in order that the staff may determine the probable mental condition of the patient at the time of the alleged crime, and may also give their opinion of the patient's mental condition at the time of examination.

Act No. 237 of the 1955 Legislature amended Act No. 3 so that counties sending patients to the hospital could be charged \$50.00 for the thirty days' stay. This has been changed by the Board of Control to \$90.00 for the thirty day period because the cost of properly processing these cases far exceeds even the \$90.00 charge; in fact, \$90.00 is routinely charged *all* patients who can afford to pay.

The following chart will, I believe, clarify the problems faced by our staff in working up and diagnosing these cases:

ACT NO. 3'S STAFFED 1956-59				
	1956	1957	1958	1959
TOTAL STAFFED	155	192	237	252
DIAGNOSIS:				
Without Psychosis	112	133	177	197
Brain Trauma, Gross Force, With Psychotic Reaction ..	1	—	—	—
Chronic Brain Syndrome As- sociated with Circulatory Disturbance, With Psy- chotic Reaction	3	2	4	10
Chronic Brain Syndrome As- sociated with Convulsive Disorder, With Psychotic Reaction	2	2	1	—

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Diagnosis:	1956	1957	1958	1959
Affective Reaction, Manic Depressive Reaction, Ma- nic Type	1	3	6	3
Schizophrenic Reactions	20	29	22	25
Paranoid Reaction	—	2	2	—
Mental Defective, Psychotic Reaction	2	5	4	2
Involutional Psychotic Reaction	—	1	—	1
Chronic Brain Syndrome As- sociated with Disturbance of Metabolism, Growth or Nutrition	—	1	2	—
Total With Psychosis ...	29	45	42	41
With Mental Diagnosis but Responsible	14	14	18	14

Of the 155 Act No. 3 cases admitted in 1956, 109 were white male, 38 were colored male, 5 were white female and 3 were colored female. In 1956 there were 9 charged with Criminal Homicide and 9 with Rape. Of the 155 cases, 112 or 72 per cent were found to be without psychosis. Of these 155 cases only 33 were paid for by the counties which sent them. (At the present time most of the coun- ties accept their obligation to pay.)

It will be noted in the chart that in 1957 there were 192 Act No. 3 cases ad- mitted, an increase of 37 patients over the total for 1956. In 1957 there were 21 Criminal Homicide cases and 7 Rape. Of the 192 cases of 1957, 133 or 69 per cent were found to be without psychosis.

During 1958 there were 237 Act No. 3 cases admitted, an increase of 45 cases over 1957. Of these 237 cases 177 were found to be without psychosis, which would be 74 per cent. Twenty-four of these were charged with Criminal Homi- cide and 6 with Rape.

During 1959 there were 251 Act No. 3 admission, of which 197 or 79 per cent were found to be without psychosis. The increase in admissions over 1958 was 14. In 1959 there were 20 cases charged

with Criminal Homicide and 6 charged with rape.

As would be expected, Pulaski County sent in the largest number of cases each year. Twenty-two in 1956, 42 in 1958, and 48 in 1959, which is roughly 20 per cent of the total.

From the preceding material certain conclusions can be drawn. Chiefly, that the large number of cases having non-psychotic diagnoses indicates that many of these cases are sent in unnecessarily. In fact, many times patients state that they were confident they were all right mentally, but that their lawyers needed more time to prepare their defense or wished to delay trial to a later court term. It is difficult for an already overburdened staff to accept such occurrences willingly.

Secondly, as it costs the State Hospital much more to properly work up a court case than the ordinary case, it is obvious that the \$90.00 charged is definitely too small a sum, and that certainly all counties should unquestioningly accept their responsibilities for this minimum amount charged. A conservative estimate made by our Director of Administration, A. C. Yopp, places the cost to the hospital at about \$650 per case. This takes into consideration all costs, such as special tests and time spent by trained professional people.

A third problem which should be corrected is this: When a patient is found to be psychotic and in need of early treatment, such treatment cannot be started until the committing court sends in an Act No. 241 Commitment. Any delay of this costs the hospital, the patient, and the taxpayer, as needed treatment is postponed, therefore delaying or hindering early recovery or remission. Consequently, such commitments should be sent immediately when needed.

In conclusion I would like to stress the earnest desire on the part of the State Hospital Staff to do a good diagnostic job on all Act No. 3 cases. I would also like to emphasize that cases exhibiting no diagnostic problems should not be sent to the hospital under Act No. 3 provisions.

The following shows the number of Act

No. 3 cases sent in by each county for the years considered:

COUNTY	1956	1957	1958	1959
Arkansas	—	4	4	—
Ashley	1	2	2	1
Baxter	—	1	1	1
Benton	2	1	3	3
Boone	—	1	—	1
Bradley	—	2	3	1
Calhoun	—	—	2	—
Carroll	3	1	3	5
Chicot	2	1	5	2
Clark	2	—	—	3
Clay	1	2	—	3
Cleburne	—	2	—	—
Cleveland	—	—	—	—
Columbia	1	3	3	1
Conway	3	2	4	4
Craighead	—	1	7	7
Crawford	2	2	1	—
Crittenden	7	4	6	19
Cross	1	—	2	3
Dallas	2	—	—	—
Desha	2	—	5	4
Drew	—	—	2	—
Faulkner	3	—	3	4
Franklin	1	—	1	1
Fulton	—	—	—	1
Garland	5	—	4	11
Grant	2	—	—	4
Greene	2	—	2	1
Hempstead	2	1	1	—
Hot Spring	2	4	6	4
Howard	2	—	—	1
Independence	5	—	7	1
Izard	1	1	—	—
Jackson	3	5	3	9
Jefferson	10	9	18	14
Johnson	—	1	—	—
Lafayette	1	—	1	—
Lawrence	1	3	—	1
Lee	—	4	5	3
Lincoln	—	1	2	3
Little River	—	2	—	1
Logan	2	2	3	5
Lonoke	1	3	1	2
Madison	1	—	—	—
Marion	—	1	—	1
Miller	8	6	5	9
Mississippi	5	9	14	12
Monroe	2	2	2	3
Montgomery	—	—	—	1
Nevada	1	1	2	1
Newton	—	—	1	—
Ouachita	1	2	1	2
Perry	1	—	3	—
Phillips	5	5	7	4
Pike	—	1	1	—
Poinsett	8	5	5	7

ROBERT G. CARNAHAN, M.D.

COUNTY	1956	1957	1958	1959	St. Francis	1	1	3	5
Polk	—	1	1	2	Stone	—	—	1	1
Pope	—	1	2	2	Sebastian	3	1	9	3
Prairie	1	1	—	—	Sevier	1	4	1	—
Pulaski	22	42	43	48	Union	3	7	7	3
Randolph	1	—	1	3	Van Buren	—	1	—	1
Saline	4	5	8	5	Washington	1	1	3	3
Scott	—	1	—	—	White	2	5	3	5
Searcy	1	1	—	—	Woodruff	5	—	3	1
Sharp	2	2	1	1	Yell	4	—	1	3

♦ *What's* NEW ♦

Surgical Aspects of Acquired Diseases Of the Aorta and Major Peripheral Arteries

JOSEPH A. BUCHMAN, M.D.*

Aneurysms of the aorta have challenged physicians for centuries, and although various methods of treatment were devised and attempted, none were successful. These methods have always been palliative and not curative. Recently, curative therapy has been accomplished by the development of the surgical principle of extirpation of the lesion with restoration of normal function. The application of this principle has been successful primarily because the principles of blood vessel suture and arterial graft replacement have been accomplished.

Impressive progress has also been made in the treatment of arteriosclerotic conclusive disease, the gravity of which has long been recognized. One of the major causes of death and disability in vascular lesions has been the blocking of such vital arteries as the aorta and those which supply blood to the brain, heart, and kidneys. Extensive research has led to the important concept of this disease, leading to the application of highly effective means of surgical treatment. This concept is based upon the demonstration that in many forms of this disease the atherosclerotic occlusive lesion is well localized and segmental in nature with relatively normal arteries proximal and distal to the diseased vessel. With this in mind, surgical methods have been developed whereby this diseased section of an artery can be replaced by a substitute artery or by the removal of the occluding portion of the inner layers.

Aneurysms present many problems and are more common than one would first think. Pathologically, they may be di-

vided into two types: the true aneurysm, in which one or all layers of the parent artery enter into the composition of the sac, and the false aneurysm in which the sac is formed by a layer of vascular connective tissue. In the false aneurysm one usually has a pulsating hematoma as a result of disruption of the wall of the artery by either infection or trauma. Morphologically, they may be divided into three types: dissecting, sacciform, or fusiform. The dissecting aneurysm is of intramural origin and is characterized by hemorrhagic intramural separation of the aortic wall in the region of the media usually communicating with the normal lumen by an intimal tear. The sacciform aneurysm has a pouch-like appearance with a relatively narrow neck. Fusiform aneurysms involve the entire circumference of the parent artery and are spindle-shaped and tend to be multiple.

In the formation of an aneurysm the basic pathology lies in the medial elastic coat of the vessel. Only the outer adventitious layer remains to withstand the repeated force of systolic impact. The medial disruptive process may be the result of trauma, infection, or atherosclerosis with progressive dilatation as the systolic pressure exerts its force on the weakened area. Nature attempts to heal by the development of fibrous tissue or the deposition of laminae thrombi on the inner surface of the aneurysm and thus attempts to maintain a normal size to the lumen. The efforts of nature, however, are inadequate to cope with the continuous pulsating effect of the systolic force. The pressure is so great that the fibrous tissue is

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an unsatisfactory replacement of the elastic tissue and progressively becomes thinner and weaker. The laminated thrombus does not undergo the normal process of organization within the aneurysmal sac. Eventually, due to ischemia, the center of the clot will liquify and become necrotic. Consequently, the aneurysmal sac tends to become progressively larger, leading to a final rupture of the aneurysm.

Aneurysms involving the abdominal aorta are predominantly arteriosclerotic in origin. These aneurysms as a rule are fusiform and arise just below the origin of the renal arteries. They often extend just distal to the bifurcation. Arteriosclerosis is also the usual etiological factor in aneurysms of the peripheral arteries and they likewise are characteristically fusiform in type. Also of note is that trauma is a frequent causative factor in aneurysms of the peripheral arteries. Aneurysms about the arch of the aorta are usually syphilitic in origin and are sacciform in character. Arteriosclerosis may lead to aneurysms in the thoracic aorta but these are more likely to be fusiform in character.

The signs and symptoms of aneurysms usually result from encroachment upon adjacent structures. Consequently, the type, location, and the size of the lesion will produce the signs and symptoms. Small aneurysms produce only slight discomfort or will be asymptomatic. As the aneurysm grows, however, the signs and symptoms become more marked. Thus, a large aneurysm of the ascending aorta with progressive encroachment upon adjacent structures such as the vena cava and innominate veins will produce venous distention and edema of the shoulders, head, and neck. Dyspnea and cough result from compression of air passages, and death by suffocation is not uncommon. Blood-streaked sputum is an ominous sign that rupture of the aneurysm is imminent. Hoarseness may be produced by compression of the recurrent laryngeal nerve.

Cardiac decompensation may be associated with an aneurysm of the ascending aorta which produces aortic valvular incompetence. Aortography may be used to prove the diagnosis since it permits visualization of the aorta.

Aneurysms of the abdominal aorta sometimes remain silent until the acute episode of rupture takes place. However, the gradual enlargement of the aneurysm is usually accompanied by varying degrees of discomfort. The patient may experience pain in the upper part of the abdomen or the lower portion of the back with extension into the groin or lower extremities. Pain is a particularly important sign for it represents the progressive enlargement of the aneurysm and may signify that rupture is near or that there has actually been some extravasation in the retroperitoneal tissue. The most common and important physical finding is the presence of an expansile pulsating mass which usually arises about the level of the umbilicus. It may extend well into the pelvis. The mass many times is movable and nontender. The diagnosis of an aneurysm of the abdominal aorta is not difficult and it may be confirmed by x-ray studies. The aneurysms as a rule have calcium in the wall, and their presence can be demonstrated on an ordinary plain roentgenogram of the abdomen if taken in the lateral or oblique projection.

Aneurysms involving the peripheral arteries usually are asymptomatic in their early stages. Serious disabling symptoms may occur as a result, however, of their complications. This is most commonly due to thrombosis or rupture of the aneurysm. One of the most common complaints is the result of thrombosis of the aneurysm with the production of arterial insufficiency in the extremity. Rupture of the aneurysm is less likely to occur but it is a serious complication when it does.

The seriousness of aneurysmal disease cannot be over-emphasized. Kampmeier considered that the average expected duration of the life of a patient with an aortic aneurysm after the onset of symptoms was six to eight months, varying somewhat with the level of involvement. Estes has stated that once the diagnosis was made, one-third of the patients would be dead within one year. Particularly important is the fact that the degree of symptoms had no relation to prognosis. Wright, in his study of 68 cases, has stated that 4 per cent of the patients survived five

years. Thus, the presence of an aortic aneurysm regardless of the type of location is a serious and constant menace to the patient and demands prompt surgical treatment.

The operative mortality varies with the type and location of the lesion and is particularly influenced by certain factors such as advancing age, pre-existing heart disease, and acute rupture of the aneurysm. Aneurysms of the thoracic aorta are accompanied by a higher operative fatality than those of the abdominal aorta. People with marked arteriosclerosis in the advanced age groups often have associated heart disease and have a higher operative mortality. The operative mortality in people in the fourth and fifth de-

cades of life is only one-half the operative fatality of people in the eighth decade of life. Patients with pre-existing heart disease have an operative fatality three times that of patients without known heart disease.

An important factor contributing to operative deaths is acute rupture of the aneurysm. The operation is then performed as a surgical emergency on a patient in shock. A sufficient number, however, do recover to make this method of therapy highly gratifying.

Long-term followups reveal a significant increase in life expectancy in those people who have been grafted. Consequently, the surgical procedure is one which has considerable merit.

A TEACHING SEMINAR
FROM THE
UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE

VS
Clinical Physiology of The
Pulmonary Circulation

JOHN A. PIERCE, M.D.*

During the past ten years right heart catheterization has become practical for the clinical study of patients. An intense interest centered about this technique when first developed, because it provided an approach to many problems in congenital and acquired heart disease which had never been studied. Prior to the era of cardiac catheterization the clinical correlation between structural and functional changes in the vessels of the lungs was tenuous or implied. With this method, particularly significant advances have been made in the physiology of the pulmonary circulation. The purpose of this paper is to review some of the newer knowledge in this field and relate it to clinical problems in medicine.

Each vital organ receives some fair share of the total cardiac output. By contrast, the lungs are perfused with the entire cardiac output for the obvious purpose of effecting gas exchange. The pressure in the pulmonary artery is approximately 25/10 mm. of Hg in the normal resting subject, left atrial pressure is 5 mm. of Hg, and the cardiac output is about 3.2 liters per minute per square meter of body surface. Thus, the resistance to the flow of blood through the lungs (defined as the ratio of arteriovenous pressure gradient to flow) is remarkably low. This has been known for many years and is apparent as one notes the thin free wall of the normal right ventricle. Animal experiments have dem-

onstrated that right ventricular function is not essential. At least destruction of the free wall of the right ventricle of electrocauterization does not result in the appearance of right heart failure in the dog. Just how essential right ventricular function is to normal man has not been finally settled.

Normally, the pulmonary blood volume is approximately 700-800 ml. (1) A surprisingly small quantity of this blood is found in the capillaries at any one instant. Using a sensitive technique employing a body plethysmograph and nitrous oxide gas, Dubois, Forster and associates (2, 3) have recently estimated normal pulmonary capillary volume at 75 to 90 ml. As expected, slight variations occur in capillary volume with respiratory movements and the flow of blood in the pulmonary capillaries is pulsatile. Because the entire lesser circulation is subjected to the fluctuations in intrathoracic pressure, right ventricular output increases during inspiration and decreases on expiration. The opposite cycle occurs in the left ventricular flow. It has been pointed out that the total pulmonary blood volume is relatively constant. Clinicians are familiar with abrupt increases in this volume as these may be associated with the dramatic clinical symptoms of acute pulmonary edema. *why expected?*

On exercise, pulmonary artery pressure increases in the normal subject. This increase is less marked, however, than the simultaneous increase in blood flow so that pulmonary vascular resistance (pres-

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sure gradient/flow) actually decreases. Pulmonary capillary blood volume and the diffusing capacity for oxygen also increase at high levels of muscular work. The mechanism for this decrease in vascular resistance is not entirely clear although the hyperpnea of exercise surely plays a role.

Vascular control differs in the pulmonary circulation from that elsewhere in the body. (4) There is good evidence that the vagus nerve contains fibers of importance to the pulmonary circulation. Interruption of the vagus nerve blocks the decrease in heart rate and blood pressure observed in animals with acute elevations of pulmonary arterial or venous pressures. Paintal has identified vagal impulses from deflation receptors in the lungs which stimulate rapid shallow respiratory movements. It is interesting that various aromatic derivatives of guanidine and isothioureia stimulate activity in these deflation receptors. Daly and Daly recently reported that stimulation of carotid body chemoreceptors decreases pulmonary vascular resistance. This response was blocked by interrupting the vagus nerve, or the nerve fibers to the carotid sinus or by the administration of atropine. Although the importance of nervous regulatory mechanisms on the pulmonary circulation is unknown, it would appear from the results of animal experiments that chemical regulatory effects are perhaps of more significance. Studies are sorely needed on the denervated lung.

It has been shown that the level of pulmonary artery pressure in man increases linearly as the arterial hemoglobin oxygen saturation decreases. This led to the suggestion that hypoxia caused an increased resistance to pulmonary blood flow. Pulmonary hypertension can be induced in healthy young subjects simply by the inhalation of gas containing a low concentration of oxygen. (5). This hypertension appears to result from active pulmonary arteriolar constriction since left atrial pressure does not change as detected by wedging the catheter in a small branch of the pulmonary artery. The administration of 10% oxygen to a single lung in the human did not result

in any redistribution of flow between the lungs but lower (4%) oxygen concentrations provoked such a response in four of six subjects tested. (5) Thus, marked hypoxia appears to stimulate pulmonary vasoconstriction while mild degrees of hypoxia cause a variable response.

Although carbon dioxide produces a direct dilating effect on peripheral capillaries its effect on the pulmonary vessels has only recently been clarified. Manfredi and Sieker (6) investigated the effects of carbon dioxide on the pulmonary circulation in dogs by isolating the left lower lobe. They artificially ventilated and perfused this part of the lung. They found that an increased carbon dioxide tension caused an increase in pulmonary vascular resistance only if it was accompanied by a decrease in the arteriovenous gradient of carbon dioxide. As long as the arteriovenous gradient remained large (as in the control studies) the vascular resistance was normal. On studying hypoxia with their preparations they found little or no vasoconstrictive effect of hypoxic pulmonary arterial blood but a marked effect when inspired gas contained a low concentration of oxygen.

The effects of certain pharmacologic agents are of interest. The sympathomimetic amines may increase cardiac output without any marked effect on pulmonary arterial pressure. Acetyl choline is of particular interest because it is rapidly destroyed in the circulatory system. This permits effects to be observed on the lungs with the administration of dosages which have no effect on the systemic circulation. (5) Acetyl choline produces a fall from hypertensive levels of pressure in the pulmonary artery but does not affect normal pressure. It appears to induce vasodilation by a direct action. There is the hope that eventually it may be used as an indication of the functional status of the pulmonary vessels.

Recently, radioactive krypton gas (Kr^{85}) has been used for the detection of intracardiac shunt flow. (7) This method is sensitive and reliable. Interestingly, this gas can also be injected when dissolved in solution and it has been found that a single transit through the lungs virtually eliminates injected krypton from the

blood. This technique appears to be a major addition to the facilities of the cardiac laboratory.

Mitral stenosis is frequently accompanied by a striking degree of pulmonary hypertension. This is manifested by episodes of acute pulmonary edema and frank hemoptysis which most often occur during exercise. The intensity of the second heart sound in the pulmonic valve area is a physical sign with exceptional physiologic significance. An accentuated sound means pulmonary hypertension. As a general rule, the louder the pulmonic second the higher the pressure in the pulmonary artery. Of course, the typical diastolic murmurs at the apical area are diagnostic of this condition. It has been known for years that sclerotic changes occur in the pulmonary arteries of patients with mitral stenosis. The full sequence of events was not well understood, however, until after an interpretation of data obtained at cardiac catheterization.

Obstruction at the mitral valve results in a gradient of pressure from the left atrium to the left ventricle during diastole. Because there are no valves in the pulmonary veins pressure from the left atrium is transmitted retrograde to the pulmonary capillaries, pulmonary arteries and ultimately to the right ventricle. Apparently this sequence of events leads to vasoconstrictive phenomena in the small pulmonary arteries and arterioles. In this manner the pulmonary arterial pressure head can be impressed on the capillaries in just the amount necessary to effect an adequate flow. The end result is that in mitral stenosis there are two sites of obstruction to the circulation; one at the mitral valve, the other at the pulmonary arterioles. Pathologic changes include thickening and hypertrophy of the muscular pulmonary arteries (100-1000 microns in diameter) and intimal proliferation which usually is most marked in the pulmonary arterioles.

A similar type of change may be observed in the pulmonary arteries and arterioles of patients with markedly increased pulmonary blood flow. Such large left to right shunts most commonly result from a patent ductus arteriosus or an interventricular septal defect. When pulmo-

nary vascular resistance becomes extremely high in these conditions, the flow reverses its direction at the site of the shunt. This leads to the occurrence of central cyanosis in the case of ventricular septal defect and so called "differential" cyanosis in the case of patent ductus arteriosus. Because the ductus communicates with the descending thoracic aorta, these patients have cyanosis of the feet and legs. Such a patient was seen at this hospital who also developed cyanosis of the left arm and hand on exercise. An important distinction must be made between patients with congenital heart disease who have a high (and relatively fixed) pulmonary vascular resistance and patients with the acquired causes of pulmonary hypertension such as mitral stenosis. In general, surgical relief of the mitral obstruction leads to a decrease in pulmonary vascular resistance while surgical closure of a patent ductus with reversed flow usually leads to the death of the patient. Clinically, irreversible changes in pulmonary vascular resistance in congenital heart disease are related to the age of onset of the symptoms. In general, the earlier the appearance of symptoms, the greater the likelihood of severe pulmonary vascular changes.

In the patient with pulmonary emphysema it is frequently difficult to detect pulmonary hypertension on physical examination. The chest is frequently barrel shaped and all heart sounds may be faint because of the distance between the heart and the anterior chest wall. Moreover, the pulmonary hypertension may be mild but is a regular feature of severe pulmonary emphysema. (8) Surprisingly enough, the pulmonary blood flow is not decreased below normal even when the obvious physical signs of right sided heart failure are present. There is an extensive loss of pulmonary capillaries along with the severe distortion and destruction of lung parenchyma in emphysema. The diffusing capacity for oxygen is reduced. Moreover, wide fluctuations occur in intrathoracic pressure which may affect the pulmonary circulation. Finally, the increased pulmonary vascular resistance in pulmonary insufficiency

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When infection is present, VARIDASE Buccal Tablets should be given in conjunction with ACHROMYCIN[®] V Tetracycline with Citric Acid.

Each VARIDASE Buccal Tablet contains: 10,000 Units Streptokinase and 2,500 Units Streptodornase.

Supplied: boxes of 24 and 100 tablets.

1. Innerfield, I.: Clinical report cited with permission

2. Clinical report cited with permission



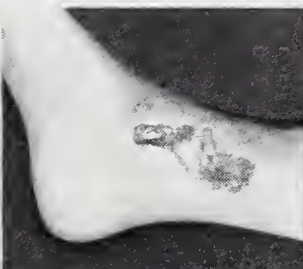
LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY
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FORCE INJURY
severe bruises
... swelling
... cleared
by fifth day²



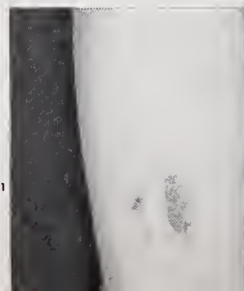
**VARICOSE
ULCER**
15 years duration
... resolved with
VARIDASE¹



**INFLAMMATORY
DERMATOSIS**
rapidly spreading
rhus dermatitis
healed within
a week¹



**INFECTED
LACERATION**
marked reversal
in 3 days...
returned
to school...
closure advanced¹



THROMBOPHLEBITIS
back on his feet
in a week after
recurrent episode¹



**REFRACTORY
CELLULITIS**
normal routine
resumed after 4 days
of **VARIDASE**¹



may be accentuated by hypoxia, as well as carbon dioxide retention and other factors. The homeostatic mechanisms are such that right ventricular hypertrophy occurs in these patients without any reduction in the usual resting level of systemic blood flow. Very little information is available on left atrial pressure in patients with cor pulmonale due to any cause. It is of particular importance to know this pressure in order to assess left ventricular function in this condition.

This brings us to the most common cause of pulmonary hypertension; that is left ventricular failure. For example, the usual patient with essential vascular hypertension has a normal cardiac output and a normal pulmonary artery pressure. Systemic arterial pressure is increased, left ventricular work is increased, and ultimately he may develop left ventricular hypertrophy. When cardiac decompensation finally appears, end diastolic ventricular pressure rises and left atrial pressure increases proportionately. Transmission of this increased pressure to the pulmonary circuit leads to pulmonary hypertension. Of course, a decrease in left ventricular output alone is not responsible for pulmonary hypertension with left heart failure. There also occurs an increase in systemic venous tone which has the effect of attempting to shift blood to the pulmonary circuit. This undoubtedly plays an important role. It does not matter what causes the left ventricular failure, the consequence to the lesser circulation is the same; pulmonary hypertension. As a rule this hypertension is not severe although occasionally hemopty-

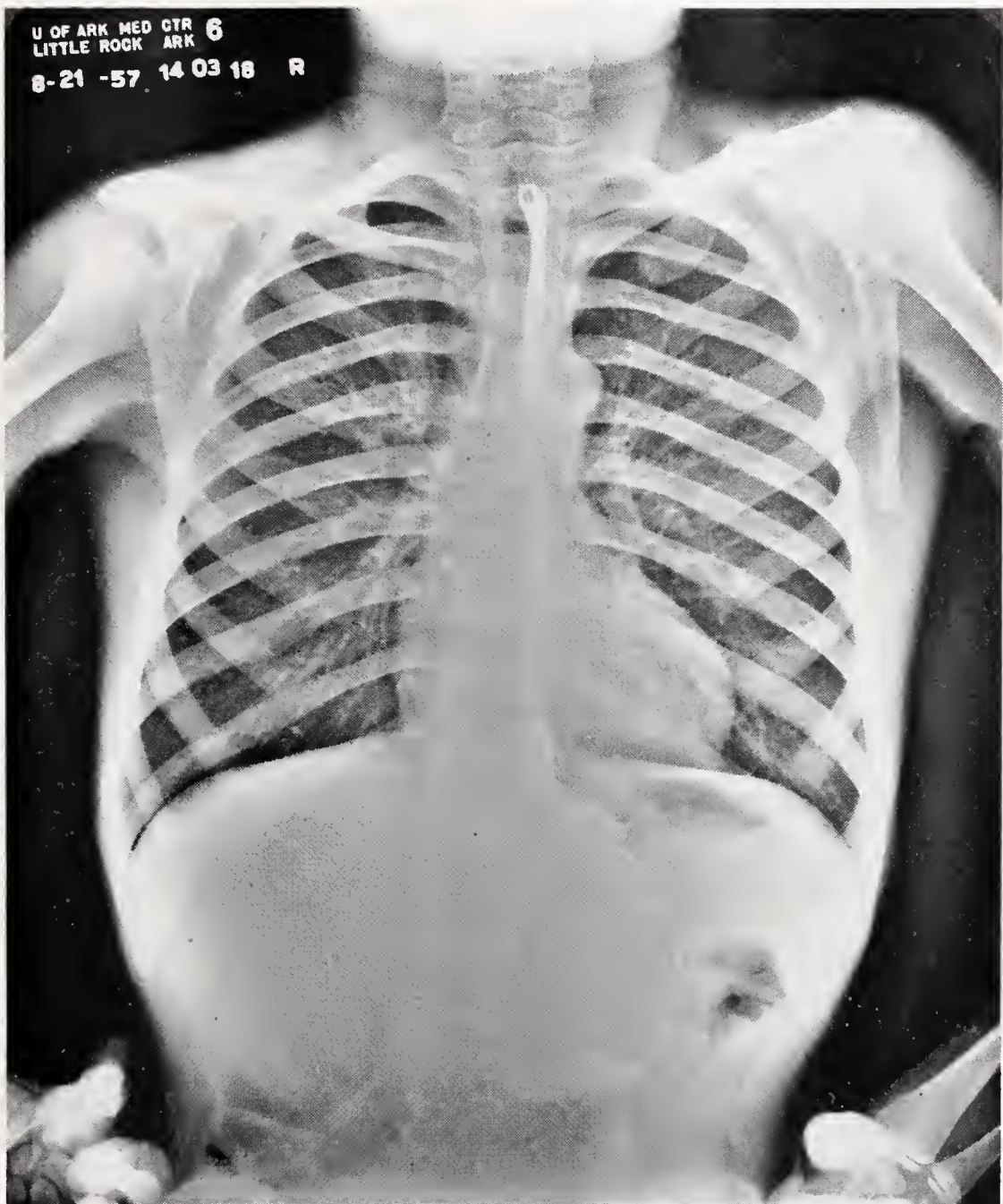
sis may result and acute pulmonary edema is not uncommon. When left ventricular failure improves as with the administration of digitalis and other treatments, the pulmonary hypertension improves.

Although much progress has been made many problems remain unsolved. Some of the techniques described have not yet been applied fully to the common clinical disorders. A number of rare and unusual diseases of the pulmonary circulation remain for the attention of future workers.

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What Is Your Diagnosis?



FOR ANSWER SEE PAGE 177

Arkansas Public Health at a Glance

Public health activities are all aimed at rendering service to the citizens at the local level. This is true of the profession all the way from the federal level to the smallest local health unit. Therefore, it can be said that the true backbone of the public health movement is the worker at the local level. Without these people working directly with the public, the objectives of education and service could never be attained.

Local public health personnel in Arkansas are drawn primarily from three disciplines: public health physicians, sanitarians, and public health nurses. There

are, in these three categories, to serve the nearly two million citizens of Arkansas only five full time and two part time public health physicians, 46 sanitarians, and 106 public health nurses. These people are located in 62 county and two city health departments.

Completing the picture of professional public health workers in county and local health departments are 14 meat and milk inspectors, two veterinarians, one full time and two part time nutritionists, one health educator, and six venereal disease investigators. Physicians and dentists in

LOCAL HEALTH SERVICES



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FEATURES

private practice augment this number by serving as part time clinicians. There are three part time dental clinicians, and 78 part time clinic physicians.

The accepted ratio of public health workers to population gives some indication of the personnel shortage problem faced by public health in Arkansas. The stand-

ard is one physician per 100,000 population. This would mean 18 instead of our five. The ratio of nurses should be one per 6,000 people, or 300 instead of 106.

The accompanying map shows the location of the physicians, sanitarians, and public health nurses in the local and county departments in Arkansas.

Editorial

Politics and the American Medical Association

ALFRED KAHN, JR., M. D.

A cogent question nowadays is whether a medical society should enter politics. It is being done and it provokes some interesting thoughts. To the extent that a professional society deviates from its main purpose, aim, or calling to that degree it lessens its stature as a profession. Trade unions openly endorse political action by their organizations but they do not, by the nature of their employment, want to be catalogued or considered as a profession.

Here in modern America there is a progressive trend for the Federal government to concern itself with a "cradle to grave" Socialistic interest in its citizenry. Where will this trend end? If the Federal government proposes progressive steps toward socialization should the Medical Profession oppose it? The alternatives seem clear enough. On the one hand is the spectre of socialized medicine with its inferior care of the patient. On the other hand is the necessity for organized medicine to enter a political fight to try and prevent the passage of such legislation. If Medicine as a group fails to enter the political arena it is tacitly endorsing measures which are inimical to the care of the patient.

The crux of this matter is that the medical profession, operating in a vacuum or working in Utopia, could aim idealistically toward its chief goal of healing the sick. In present day America the Medical Profession is subjected to many political pressures, the aims of which are not to improve the care of the sick, but to accomplish a political end. As a matter of public interest, organized medicine has to fight to preserve the system which provides the best medical care.

Does this represent a deviation from the definitions of a profession? The answer is probably neither black nor white, but some shade of gray. As long as organized medicine confines its political ac-

tivities to strictly medical affairs, it can hardly be criticized as long as its motives are clearly in the best interest of the public. Poor medical legislation passed because of apathy, tends to imply a permissive attitude on the part of the profession and this is clearly open to harsh criticism.

Assuming medicine must fight certain political measures, what organization should be used? Is it wise for a purely scientific society to divert its energy from research to politics? Will a purely political organization be too divorced from science to reflect the real needs of medicine? Actually, the current organization of medicine in America is about as good an arrangement as is possible. There are a large group of purely scientific organizations which concern themselves solely with research and teaching at all levels from that of the general physician to the super specialist. Contrasted to these organizations is the American Medical Association which has a complete medical representation and is therefore ideally arranged to express the views of the profession. Moreover, because of the diversity of type of practice of its members, it will never be a purely research society. The course of the American Medical Society in retrospect has been a wise one. It can fight the political fights for medicine, and at the same time it has promoted rather wide scientific programs so that there is a close liaison between medical progress and the political needs of the profession in bettering the health of our country.

The A.M.A. is by far the ablest voice of medicine. It has good leadership and it has sufficient funds. Despite this, other groups with narrower interests are entering into political fights. The wisdom of this is questionable. It dilutes the A.M.A.'s efforts. Furthermore, some of these smaller groups have stooped to in-

FEATURES

terne cine fights within the profession, and have even shed their dignity to the extent of newspaper name-calling; this should stop, and fortunately in Arkansas it has never been a problem.

Foremost among the political problems of the Medical Profession is the "creeping socialism" that has infected so many facets of America. Currently, political pressures are being exerted to have the Federal Government pay for the Medical care of the older citizens. All of these socialistic plans offer a seemingly desirable benefit: — something for nothing. This medical care for the aged is surely NOT FREE, even though it looks like a handout. There is a serious question if taxes to properly support such a

program would not be prohibitively high; the insidious feature of most of these socialistic programs is that the tax load is deliberately left low for several years to avoid adverse publicity until the program is underway; then an ascending tax scale is allowed and there is no upper limit. The public does not realize there is a high expense in these government schemes compared to private health insurance because in every tax dollar collected by the Federal Government it has been estimated that 40 cents is used to administer the remaining 60 cents—a very wasteful method. The American Medical Association and all non-medical groups who are against our Fabian-like socialism should fight the Forand Bill and all similar proposals.

MEDICINE IN THE NEWS

Status of Pending Legislation

From the Medical Legislative Digest

Medical Services for the Aged — On June 13, 1960, the House Ways and Means Committee favorably reported H.R. 12580, 86th Congress, which would amend the Social Security Act in four areas: (1) by providing medical care for the "medically indigent" aged, (2) by authorizing an incentive program to the states for improvement of their public assistance program, (3) through the liberalization of the requirements for disability benefits, and (4) by extending compulsory coverage of physicians under Title II of the Social Security Act. The House voted to consider this measure under a closed rule on June 22 and debated the measure for four hours on the same day. The bill was passed by the House, as reported, on June 23. The medical services for the aged provisions, as reported, were outlined on page 123 of M. D. A complete analysis of H. R. 12580 will appear in a subsequent issue of M. D.

Health Insurance for Retired Federal Employees—The House Post Office and Civil Service Committee favorably reported and amended S. 2575, 86th Congress, on June 21, 1960. This measure, which passed the Senate on May 5, 1960, would provide health benefits for certain retired employees of the Federal Government. A Subcommittee of the House Post Office and Civil Service Committee held hearings on June 17 and June 20 on this measure.

Optometric Care for Veterans — On June 20, the Senate Committee on Labor and Public Welfare favorably reported H. R. 7966, 86th Congress, a measure which would provide optometrists' services as part of outpatient care provided by the Veterans' Administration to veterans having service-connected eye conditions. This measure was passed by the House of Representatives on March 21. On January 28, 1960 and April 4, 1960, the American Medical Association sub-

mitted statements opposing this legislation.

Hazardous Substances — On June 14, the House Interstate and Foreign Commerce Committee favorably reported S. 1283, 86th Congress, a bill to require the labeling of hazardous substances intended or suitable for household use. This measure passed the Senate on March 28, 1960. On three occasions during this Congress the American Medical Association submitted statements approving the principle of this legislation.

Tax Deductions for Legislative Expenditures—The House Ways and Means Committee ordered favorably reported an amended version of H. R. 7123, 86th Congress. This bill would amend the Internal Revenue Code so as to provide that lawful expenditures for legislative purposes could be allowed as deductions from gross income.

Outpatient Treatment for Veterans—On June 6, the House, by a voice vote, passed H. R. 7965, 86th Congress, under a suspension of the rules. On June 22, the Senate Labor and Public Welfare Committee favorably reported the measure. This bill would authorize outpatient treatment for certain nonservice-connected disabilities and was analyzed on page 33 of M. D.

Control of Unburned Hydrocarbons—On June 8, the President signed into law H. R. 8238, 86th Congress. This law, known as P. L. 86-493, requires the Surgeon General of USPHS to conduct a study of air pollutants and to report the results to Congress within two years of the date of enactment.

Public Health Training Programs—The House Interstate and Foreign Commerce Committee, on June 2, ordered favorably reported an amended version of H. R. 6871, 86th Congress. This bill would amend the Public Health Service Act to provide for a public health training program. An Analysis of this measure is on page 71 of M. D.

H. R. 10, 86th Congress—On June 17, 1960, the Senate Finance Committee favorably reported an amended version of

H. R. 10, 86th Congress. Senate action on this measure is expected before adjournment.

International Health Research and Training—On June 17, the House Interstate and Foreign Commerce Committee amended and favorably reported H. J. Res. 649, 86th Congress, a bill to advance the status of the health sciences in the U. S. and the international status of the health sciences. This measure is analyzed on page 99 of M. D.

A.M.A. Restates Position On Blue Shield Program

The American Medical Association at its 190th Annual Meeting in Miami declared itself in favor of all-out support of Blue Shield Plans by the medical profession as a necessary step in preserving the voluntary approach to the problem of financing medical care. The precedent-setting action came when the House of Delegates approved a report by the Council on Medical Service which set forth specific proposals for closer relationships between the A.M.A. and Blue Shield both locally and at the national level.

Also approved were proposals for closer A.M.A.-Blue Shield staff work, plus an annual conference between the Council on Medical Service and the Board of Directors of the National Association of Blue Shield Plans.

At the local level, the A.M.A. action calls for comprehensive experimentation by Plans directed toward continued improvement of their coverage and encourages closer ties between local plans and their sponsoring medical groups.

New Disability Interpretation

On July 13, 1959, an employee of a Lumber Company, sustained an accidental injury, that arose out of and during the course of his employment, when he was helping a truck driver unload a bundle of Masonite. The injury resulted in the strangulation of an umbilical hernia. He was immediately taken to his family physician, and a reduction of the umbilical hernia was done. On recommendation of his family physician, the patient was

operated on July 14, 1959 by a specialist at a nearby hospital, at which time the umbilical hernia was repaired. A standard accepted procedure was used. Two or three days later the patient was seized with a violent episode of coughing, immediately after which he reported that he had "felt something pop".

On July 20 it was necessary that another operation be performed, and it was found that the patient had a strangulation of a loop of small intestine in the operative site. It was necessary to resect about ten inches of the intestine and do an end to end anastomosis in order to relieve the obstruction from which the patient was suffering. The patient recovered after a prolonged period of hospitalization, and filed a claim under the Workmen's Compensation Act for the amount of his hospitalization plus the cost of the two operations.

It was found from the facts, after hearing, that at the first operation the umbilical hernia was repaired according to an accepted procedure by a skilled surgeon in an accredited hospital, and that thereafter, in all probability, a silk suture had broken during the strenuous coughing episode, which allowed the loop of intestine to become incarcerated in the operative wound resulting in strangulation of the bowel and intestinal obstruction.

The question presented for determination by the Workmen's Compensation Commission Referee was whether or not under the circumstances, Act 144 of 1959 restricted medical recovery to the sum of \$500.00. Hospital and medical expenses in the patient's case greatly exceeded the sum of \$500.00. Under Act 144 of 1959, the Legislature had amended the Workmen's Compensation Act so as to restrict the recovery for medical and hospital expenses to the maximum sum of \$500.00 in the event of radical operation for hernia. The insurance carrier contended that both the first and second operations were for the hernia and that there could be no recovery in excess of \$500.00. The claimants contended that the second operation was necessitated, not for reoccurring hernia, but because of a complication after surgery as the result of an unavoidable violent coughing episode. The Work-

men's Compensation Commission Referee held that the second operation was not a hernia, but was a result of unavoidable complications, not due to negligence on the part of the claimants, which arose after the hernia operation and was separate and distinct from the original hernia operation, and, therefore, decreed that the entire medical and hospital expense was payable.

The Month in Washington

Washington, D. C., July 9, 1960—Congress returned to work this month to take up its unfinished business, including the controversial issue of health care for the aged, an atmosphere dominated by election-year politics.

The three or four week, tag-end session of Congress loomed as one of the most important meetings in the past decade as far as possible impact on the medical profession is concerned.

The lawmakers are slated to decide whether to embark the Federal government on a course that could threaten the private practice of medicine, or to adopt a voluntary program that would pose no such danger.

The omnibus social security bill approved by the House Ways and Means Committee was easily cleared by the House, 381 to 23, and sent to the Senate Finance Committee, which held two days of hearings. The measure contained a voluntary, Federal-State program for assisting needy aged persons meet their health care costs. Both the Administration and the American Medical Association endorsed the House measure as in keeping with the concept of giving the states prime responsibility for helping their citizens, for aiding those who are most in need of help, and for avoiding the compulsory aspects of health plans involving the social security mechanism.

A vote by the Finance Committee, headed by Sen. Harry F. Byrd (D., Va.), was scheduled shortly after the Senate resumed operations in August. Whatever action the Committee took, however, proponents of schemes such as the Forand bill to provide a compulsory, federal med-

ical program promised a determined fight on the floor of the Senate.

In the event Congress should approve a government medicine plan, opponents were counting on a Presidential veto to kill the measure. The Chief Executive repeatedly has asserted in strong language his all-out opposition to any compulsory plan for health care financing.

At the Senate Finance Committee hearing, Arthur S. Flemming, Secretary of Health, Education and Welfare, renewed the Administration's flat stand against the social security avenue to financing health costs. Such a plan, he said, would inevitably lead to pressures for expanding the benefits and lowering or eliminating the age requirement. Under such circumstances, a 15 per cent or 20 per cent social security payroll tax would not be too far off, he said. "We believe it is unsound to assume that revenue possibilities from a payroll tax are limitless."

Dr. Leonard W. Larson, President-elect of the American Medical Association, told the Committee the House bill is the "antithesis of the centralized, socialized, statist approach of the proposals advocating national compulsory health insurance."

"To those critics who call this program modest, we say that fiscal irresponsibility, unpredictable cost and maximum nationalization are not the accepted criteria for good legislation," he testified.

A spokesman for the insurance industry pointed out "giant strides" made by private health insurance in recent years in covering aged persons. E. J. Faulkner declared that one of the most prevalent and erroneous assumptions on the matter is that most of the aged aren't able to contribute to financing their own health care costs.

The Social Security health bills, he said, "would impair or destroy the private practice of medicine, would add immeasurably to our already crushing tax burden, would aggravate our severe public fiscal problems, and would entail other undesirable consequences."

In other testimony, the AFL-CIO again urged enactment of a Social Security health bill; the American Optometric As-

sociation and the International Chiropractors Association urged that health benefits included in any bill include the services of osteopaths and chiropractors, respectively.

On another legislative proposal of interest to the medical profession — the Keogh-Simpson bill — a Senate debate was scheduled this month. Sen. Gordon Allott (R., Colo.) said in a Senate speech that "I believe that this legislation will have the overwhelming support of this body."

The bill, which would encourage retirement savings by the self-employed such as lawyers, small businessmen and physicians, has already been approved by the House. The Senate bill, voted by the Senate Finance Committee, would require participating self-employed to establish retirement plans for their employes.

* * *

The appointment of Dr. Miles F. Kelly as Assistant Superintendent at the Benton Unit of the Arkansas State Hospital effective July 1 has been announced by Dr. Granville L. Jones, Superintendent.

Dr. Kelly, a native of Arkansas, took his pre-med course at the University of Arkansas and his M. D. degree at the University of Arkansas School of Medicine. After serving his internship he had a year of special military general medical service at Fort Benning, Georgia. He joined the staff at the Benton Unit of the State Hospital in March, 1954 as staff physician and in August, 1955 transferred to the Little Rock unit. In 1957 he received an appointment as psychiatric resident. Before joining the Arkansas State Hospital staff, Dr. Kelly was in private practice at Sheridan.

* * *

Three psychiatric residents have been added to the staff at the Little Rock Unit of the Arkansas State Hospital. These are Dr. Irvin L. Carlton, Dr. Richard L. Daniel and Dr. Charles P. Harris.

Dr. Carlton is a native Arkansan. He obtained his BS degree at Arkansas State College, Jonesboro, and his MD degree at the University of Arkansas Medical School. He is a member of the American

Medical Association, Arkansas Medical Society and the Lee County Medical Society. Before joining the staff at the Little Rock Unit Dr. Carlton was engaged in private practice in Marianna, Arkansas.

Dr. Daniel is a native of Texas. He had his pre-med training at Texas A. & M. College, College Station, Texas; and obtained his MD degree at Baylor Medical School, Waco, Texas. He is a member of the American College of Surgeons, a fellow in the International College of Surgeons, a member of the Garland County Medical Society and the Arkansas Medical Society. Dr. Daniel was chief of the Department of General Surgery at the Wade Clinic in Hot Springs, Arkansas for the past fifteen years.

Dr. Harris is a native of Oklahoma and had his pre-medical training at the University of Oklahoma. He obtained his MD degree from the University of Tennessee, Knoxville. After his internship and residency training he did private practice in Jonesboro, Hot Springs, and Caraway, Arkansas.

* * *

The Vocational Rehabilitation Center for the mentally ill on the grounds of the Little Rock Unit of the Arkansas State Hospital, operated cooperatively by the State Hospital and the Rehabilitation Service of the State Department of Education, is attracting more and more visitors from other states because of its successful operation and because Arkansas is a pioneer in the development of such a program.

As the result of lectures given out of state by Dr. Hayden H. Donahue, Assistant Superintendent, relative to the rehabilitation of the mentally ill, representatives of rehabilitation agencies and mental hospitals from Florida and Georgia have recently visited the center. Both groups were favorably impressed with the pattern set by Arkansas in this work.

* * *

Dr. Gunnar Dybwad, executive director of the National Association for Retarded Children was a recent visitor to the Arkansas Children's Colony at Conway. In looking over the accomplishments of the first year, Dr. Dybwad said, "The first

year accomplishments have been very good, but the people of Arkansas must realize that they have only started—they have an obligation to more than 1,200 other children who have not been fortunate enough to find a place in the Colony.” Also, “This Colony is the only public school of its kind in the entire United States—perhaps in the world—unique in the small capacity of the classrooms and cottages. Such a plan offers much more individual care to children and could even hasten their return to public life as worthwhile citizens.”

ANNOUNCEMENTS

The Duke University Medical School is sponsoring a postgraduate Medical Seminar Cruise to the West Indies November 9-18, sailing from New York aboard the new KUNGSHOLM, Sweden's largest transatlantic liner and cruise ship.

Shipboard lectures on various subjects in medicine, pediatrics and surgery will be given by members of the Duke Medical School faculty. The instructional program will provide twenty hours credit toward postgraduate requirements of the American Academy of General Practice.

For further information on medical details, please address Director of Postgraduate Education, Duke University School of Medicine, Durham, North Carolina and on the tour itself, address the Allen Travel Service, Inc., 565 Fifth Avenue, New York 17, N. Y.

The American Rhinologic Society will hold its sixth annual meeting at the Belmont Hotel, Chicago, October 8. Physicians are invited; there is no registration fee. The guest of honor and one of the afternoon speakers will be Dr. Henry L. Williams of the Mayo Clinic, Rochester, Minn., whose subject will be “Thirty Years of Experience in Rhinology”. The dinner speaker will be Dr. Morris Fishbein, Chicago, who will speak on “Fifty Years of Medical Progress.”

A two-day surgical seminar in the Illinois Masonic Hospital, Chicago, will immediately precede the annual meeting.

For information, write Dr. Robert M. Hansen, secretary, American Rhinologic Society, 1735 North Wheeler Avenue, Portland, 17, Ore.

The American Urological Association offers an annual award of \$1,000 (first prize of \$500, second prize \$300, and third prize \$200) for essays on the result of some clinical or laboratory research in Urology. Competition is limited to Urologists who have been graduated not more than ten years, and to hospital internes and residents doing research work in Urology. For full particulars write the Executive Secretary, William P. Didusch, 1120 North Charles Street, Baltimore, Maryland. Essays must be in his hands before December 1, 1960.

Notice of Film Release

“Introduction to Tissue Culture Techniques” (F-388) Filmstrip, 35mm, color, sound, 51 frames, 8 minutes. Summary: Using monkey kidney tissue as an example, this filmstrip demonstrates the step-by-step procedures in producing and maintaining a tissue culture. Briefly summarizes the uses of tissue culture. As the title suggests, this is an introduction to laboratory practice in the techniques. Purchase, list price \$9.10, from United World Films, Incorporated, 1445 Park Avenue, New York 29, N. Y. Short-term loan (United States only) Communicable Disease Center, Public Health Service, Department of Health, Education and Welfare, Atlanta 22, Georgia.

“Techniques of Laboratory Diagnosis of Influenza” (M-368) MP-16mm, b & w, sound, 17 minutes. Summary: Shows step-by-step procedures that are now recommended to be used in the laboratory diagnosis of influenza. Explains and demonstrates the procedures, including collection of specimens, isolation of the virus by intra-amniotic inoculation of chick embryos, rough agglutination tests, titration, hemagglutination tests, and establishment of antibody content. A revision of 4-101, “The Laboratory Diagno-

sis of Influenza". Purchase list price \$36.57 from United World Films, Inc., 1445 Park Ave., New York 29, N. Y. Short-term loan (United States only) Communicable Disease Center, Public Health Service, Department of Health, Education and Welfare, Atlanta 22, Georgia.

"Biology and Control of Domestic Mosquitoes" (M-357) MP-16mm, color, sound, 21 minutes. Summary: Designed to train Public Health Service personnel and students of public health and to induce municipal and local health department officials, civic and service groups and individuals to cooperate in the control of domestic mosquitoes of public health importance. Purchase, list price \$161.98 from United World Films, Inc., 1445 Park Ave., New York 29, N. Y., short-term loan (United States only) Communicable Disease Center, Atlanta 22, Georgia.

* * *

The 38th annual Fall clinical Conference of the Kansas City Southwest Clinical Society will meet October 3, 4, 5, 1960 at the Hotel Muehlebach, Kansas City, Missouri. An intensive and varied program is offered. Reservation and membership should be sent in to Kansas City Southwest Clinical Society, 3036 Gillham Road, Kansas City 8, Missouri.

Obituary

Dr. John Wesley Brown, 82, prominent retired physician, banker and land owner died at his home in Pocahontas on June 18 after an illness of several years. He was born Oct. 2, 1878 near Pocahontas, and graduated from Barnes Medical College in St. Louis in 1903. He had practiced medicine in Pocahontas since 1913. Funeral services were conducted at the First Methodist Church with Masonic rites at the graveside in Masonic cemetery.

Dr. John Paul McAlister, aged 54 died June 26 at a Camden hospital. He was

a member of First Baptist Church and the Ouachita County Medical Association. Survivors include his wife, Mrs. Helen Heuer McAlister; a son, John McAlister of Warren; a daughter, Mrs. D. W. Patterson, Jr. of Elliott and four grandchildren. Funeral was held at the First Baptist Church, Camden, and a second service was held at the First Baptist Church, Harrison, and burial was made in Maplewood Cemetery in Harrison.

PERSONAL AND NEWS ITEMS

Dr. Henry B. White, who is interning at Baptist Hospital in Little Rock has accepted a temporary appointment to the Community Health Clinic in Perryville. He is replacing **Dr. Nils Pehrson** who was at the Clinic for two weeks to fill in after **Dr. Carroll Shukers** resigned June 1.

Dr. George Morrison Henry of Thornton, who graduated with honors from the University of Arkansas Medical School on June 5, will intern at Duke Hospital, Durham, North Carolina.

A new physician at Conway is **Dr. Bob G. Banister, Jr.**, a cousin of **Dr. B. F. Banister, Jr.** He will join the Banister Lieblong Clinic when a new clinic to be erected at North Street and Parkway, Conway, is completed. In the meantime **Dr. Banister** will maintain offices in the Smith Building.

Governor Faubus recently appointed **Dr. John F. Guenthner** of Mountain Home to the State Medical Board. He succeeds **Dr. C. H. Young** of Little Rock who resigned.

Forrest City has a new physician in the person of **Dr. Leon Purifoy** who will be associated with **Dr. Adron Bradley**. **Dr. Purifoy** is a graduate of the University of Arkansas School of Medicine and interned at St. Vincent's Hospital and Arkansas Children's Hospital, Little Rock.

Dr. W. M. Wells, a native of Pocahontas, is now associated in practice with **Dr. Gerald Pearce** in Heber Springs. Dr. Wells is a graduate of the University of Arkansas School of Medicine; took his pre-med work at Hendrix College, Conway, and has recently completed his internship at St. Vincent's Infirmary in Little Rock.

Dr. Joseph B. Shaw, son of Dr. and Mrs. Ernest I. Shaw of Little Rock, received his medical degree June 17 from Jefferson Medical College of Philadelphia.

Dr. Wayne Glenn has recently opened offices in Walnut Ridge, and will be on the staff of Lawrence Memorial Hospital.

Dr. James W. D. Wilson III of Little Rock, who was president of the 1960 graduating class of the University of Arkansas, School of Medicine, received the award as the "most outstanding Medical School graduate of 1960", and following his graduation in June will intern at the University of Arkansas Medical Center.

Dr. Ben I. Heller, professor in the department of medicine at the University Medical Center has resigned his position to become professor of medicine at Marquette University and chief of medical services at the VA Hospital in Milwaukee, Wisconsin. Dr. Heller will assume his new position in September.

Dr. Nancy K. Clary of Stuttgart, has returned to her home town to open her offices, and she is now associated with **Drs. J. J. Magie** and **Jack L. Pritchard** in their clinic. She thus became Stuttgart's second woman doctor, following **Dr. Lucille K. Champion**. Dr. Clary is the daughter of Stuttgart school Superintendent and Mrs. J. D. Clary.

Dr. Thomas Wortham, Jacksonville physician, was named chairman of the new Hospital Commission, with **Dr. J. A. Johnson** named to the commission. Dr. Wortham spearheaded the successful vote drive to pass a hospital construction bond issue in Jacksonville to assure that city of a hospital.

After years of delay and crippling illness, **Dr. W. R. Vaughter** received his medical degree with the graduating class in June from the University of Arkansas School of Medicine. Dr. Vaughter will intern at St. Vincent's and then expects to become a general practitioner in a small Arkansas city.

Dr. James F. Daniel, who received his medical degree in June from the University of Arkansas School of Medicine, will intern at the University Hospital.

Two doctors who were graduated in June from the University School of Medicine are **Dr. William R. Scurlock**, who will intern at the Confederate Memorial Hospital in Shreveport, La., and **Dr. G. Glen Fincher**, who will intern at Balboa, Panama. The latter's wife, **Dr. Martha Ann Fincher**, will practice in pediatrics at the same hospital in Balboa.

The president of the Arkansas Private Flyers Association is **Dr. Barton Rhinehart** of Little Rock. The Club takes off a weekend or so each year and flies to some lodge or historical site just to swim and loaf. In June the trip was made to Sequoia State Park near Waggoner, Oklahoma. A few Arkansas doctors who belong to the Flying Physicians, joined the group at Waggoner for the weekend.

In a previous issue of the Journal **Dr. B. C. Middleton** of Texarkana was reported as being retired. He is still in active practice and plans to remain in practice.

Dr. Joe Martindale and family have recently moved to Benton from Ft. Hood, Texas, where he has been serving as head of the eye, ear, nose and throat division.

Dr. W. O. Colyar, Jr., who has completed a year's surgery residency at the Arkansas Baptist Hospital in Little Rock, has opened his office at the Cleveland County Memorial Hospital in Rison for the practice of medicine.

Dr. James Kelly Cornett who completed his internship at St. Vincent's Infirmary,

in June, has opened his office for general practice in Little Rock.

Dr. Daniel Tonyman has recently begun practice of medicine in Marvel, and is associated with **Dr. J. Wise**.

Trumann has a new doctor. He is **Dr. Robert S. Colbert**, a native of Memphis, who has taken up the practice formerly held by **Dr. Keith B. Kennedy**, who left Trumann for New Orleans recently.

New Members . . .

Betty Ann Lowe is a new member of the Pulaski County Medical Society. She is a native of Texas and received her preliminary education from the University of Arkansas at Fayetteville, from which she received a B.S. degree. Her M.D. degree was obtained from the University of Arkansas School of Medicine in 1956. She interned at the University of Arkansas and served a residency at the Children's Medical Center, Boston, Massachusetts. **Dr. Lowe** is Chief Resident and instructor in Pediatrics at the University of Arkansas. **Dr. Lowe** transferred her membership to the Miller County Medical Society in July.

Dr. John L. Hudson of Van Buren is a new member of the Crawford County Medical Society. A native Arkansan, **Dr. Hudson** took pre-med at the University in Fayetteville, and received his M.D. degree from the University of Arkansas School of Medicine in Little Rock in 1955. He served his internship at St. Francis Hospital in Wichita, Kansas. **Dr. Hudson** practiced at Piggott, Arkansas prior to opening his office at 1607 East Main in Van Buren early in 1960.

Proceedings of Societies

Dr. David M. Russell of Jasper has been elected president of the 9th Council of Arkansas Medical Society. This composes all of the counties in Northwest Arkansas. **Dr. Joe Bill Hall** is secretary.

Dr. Frank M. Burton, Hot Springs, was elected president of the Arkansas Medical Board at a meeting June 9-10 in Little Rock. **Dr. Jeff Baggett** of Prairie Grove was elected vice president. **Dr. Joe Verser** of Harrisburg was reappointed secretary by the Board.

ANSWER TO WHAT IS YOUR DIAGNOSIS

HEART—TETRALOGY OF FALLOT

This patient is a 11 year old white male with a history of cyanosis as an infant and cardiac murmur heard first at 14 months of age. There was marked limitation of exercise tolerance and the patient squats in order to rest. Physical examination revealed marked cyanosis and clubbing with slight precordial chest deformity. Auscultation revealed a second sound of diminished intensity in pulmonary area without splitting. There was an early and mid grade II and III blowing murmur heard best in the 3rd and 4th intercostal space transmitting up to pulmonary area.

Operative findings revealed the diagnosis of high infundibulum stenosis. There was dilatation of the base of pulmonary artery and a small high infundibulum chamber with a thrill present proximal and distal to the valve.

The films reveal the heart not to be enlarged. The pulmonary arteries are very small. There is enlargement of the right ventricle. The aortic arch is on the left. There is concavity in the region of the main pulmonary artery.

Book Reviews

HORMONES IN BLOOD. Ciba Foundation, Editors G. E. W. Wolstenholme and Elaine C. P. Millar. Little, Brown & Co. Boston. 416 Pp. \$9.00 1957.

This is another in the series of Ciba Foundation Symposia. This particular group of papers discusses hormones in the blood and covers thyroid and thyrotrophic hormones, pituitary hormones,

adrenal hormones, the hormones of pregnancy, ovarian hormones and insulin. This book consists of separate papers which are easy to read but covers such a limited field that the book will be of interest only to the research workers and internists. This book is not recommended to the general physician as the scope of the studies is too narrow. On the other hand, it is an excellent book and of great interest to the people in the field of endocrinology. AKJ

PSYCHOSOMATIC MEDICINE. Edward Weiss, M. D. O. Spurgeon English, M. D. W. B. Saunders Company; Philadelphia London. Pp. 557. 1957.

This third edition of Weiss and English textbook is one of the few authoritative textbooks in the field of psychosomatic medicine. It is well written and easy to read. Every effort is made to put this inexact science into a precise form so that empiric and experimental studies can be interpreted on a rational basis. The book discusses the major body systems in light of psychosomatic medicine. This book is heartily recommended to medical students, general physicians and physicians practicing medical specialties. AK

THE PLASMA PROTEINS: Clinical Significance.

By Paul G. Weil, M. D., Ph.D., Director, Transfusion Service and Assistant Physician, Royal Victoria Hospital; Lecturer in Medicine, McGill University; Consultant in Medicine, Queen Mary Veterans and Grace Dart Hospitals; Consultant in Transfusion, Queen Elizabeth and Royal Edward Laurential Hospitals. Not Illustrated, 133 pp., 1959, \$4.95. J. B. Lippincott Company, Philadelphia and Montreal.

This small handbook of 133 pages outlines a good deal of the current information on plasma proteins in a very simple, easy to read form. In its current format it provides a very easy to read, handy reference for the general physician. Much technical information of interest to the research physician is omitted. This book is in suitable form as a handy, brief reference for medical students. This book is recommended for the general physician and medical student as a brief source of information of the common facts concerning plasma proteins. AKJ

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

THE MANAGEMENT OF RELAPSE IN TUBERCULOSIS

ROBERT V. COHEN, M.D., *Philadelphia Medicine*,
January 15, 1960

Tuberculosis patients who have had chemotherapy in the past are more difficult to treat if relapse occurs than those who were treated without drugs. Drugs combined

with modified bed rest should be used in all cases. Effective first-treatment is the best defense against relapse.

The management of patients who relapse after treatment for tuberculosis can be divided into two groups, one of which is relatively easy, the other often very difficult. The easy group is composed of patients who were treated, apparently successfully, without antituberculosis drugs. Every year a small number of these are found to have active disease. They should be handled exactly as first-treatment cases: with adequate rest, two drugs, and—if indicated—surgery. If the patient is a responsible graduate of an old-time tuberculosis hospital, it may not be necessary to keep him in a hospital for the entire duration of drug therapy. A preliminary hospital work-up is needed for complete evaluation. This should include radiologic and bronchoscopic study, pulmonary function tests, bacterial drug susceptibility determinations, and careful observation for untoward drug reactions. After this, if the home is adequate and if the patient is sufficiently intelligent and reliable, he can be treated on an outpatient basis. This does NOT mean that he can continue to work. To give a patient a bottle of pills and tell him to come back in 4 or 6 months, is not tuberculosis treatment.

Patients with much fibrosis or those who have had pneumothorax or thoracoplasty may have greatly reduced pulmonary function. Surgical measures should be undertaken only after careful assessment of pulmonary function. Older patients who improve and turn negative on chemotherapy should be maintained on drugs for a long, long time. The more extensive the original lesion or the older the patient, the longer the drug regimen. Drugs can be taken "For Life" in the treatment of tuberculosis, just as in the treatment of diabetes, pernicious anemia, epilepsy, and other diseases.

RELAPSE AFTER CHEMOTHERAPY

By far the larger and more difficult group of patients seen in relapse today are those who have had chemotherapy in the past. The great majority of these unfortunate situations arise because someone has broken one of the three fundamental commandments of chemotherapy:

I. Thou shalt not stop first-treatment drugs too soon.

II. Thou shalt not interrupt treatment.

III. Thou shalt not use up thy best drugs in the first round.

A patient who has active tuberculosis after "adequate" drug treatment is in a very tough spot indeed.

The initial work-up should include, in addition to the items mentioned above, a meticulous history of drug treatment, dosage, and duration. Tests of bacterial susceptibility to drugs are mandatory. By and large, test-tube resistance to streptomycin parallels clinical resistance. Giving more streptomycin in such situations can cause toxic reactions but do no good. In first-treatment cases, resistance to isoniazid in the test tube does not always parallel the clinical situation; if the drug is continued, clinical improvement may be anticipated. This does not apply to patients who relapse while on treatment or after treatment. These patients usually show both test-tube and clinical resistance. If the patient in relapse has not had one of the major drugs (isoniazid or streptomycin), he certainly should get it, in combination with PAS or a PAS substitute. Usually, unfortunately, the patient has had isoniazid-PAS-streptomycin prior to relapse. One reason why many patients use up their two best drugs during first treatment is the improper evaluation and handling of drug reactions. Reactions can be classified as: (a) Toxic, such as eighth nerve damage due to streptomycin or neuropathy due to isoniazid. (b) Intolerance, gastro-intestinal symptoms due to PAS. (c) Hypersensitivity, or true allergy: fever, adenitis, rashes, changes in blood, purpura, hepatitis, shock, even death.

DRUG REACTIONS

Every drug reaction should be analyzed and classified, as each type requires different handling.

Toxic reactions: reduce dose, change form, give antidote if available (B6 for isoniazid).

Intolerance: reduce dose, change form (KPAS or resins for sodium PAS), give counteracting medicine (antacids, etc.).

Hypersensitivity: STOP DRUG. Desensitize. If the patient has used up his

first team drugs, the second and third team drugs are left. These, alas, are not too good. Pyrazinamide is a potent drug. It is best when given in combination with isoniazid, which is already used up. It is potentially toxic to the liver (3.5 to 10 percent in various studies), hence most physicians prefer to give it for a relatively short time—about three months, with frequent tests of liver function. If any surgery is planned, pyrazinamide is an excellent drug to "cover" the period of surgery and convalescence.

Cycloserine is not a very potent drug; used alone to treat a patient in drug-resistant relapse, it is of little value. Viomycin and terramycin have some effect, but are not very potent. Kannamycin has proved more toxic than useful. Hinconstarch, streptovaricin, and the hydrazones of isoniazid all seem to work better in reports from abroad than in patients in relapse.

Corticosteroid drugs, which can be very helpful in some selected, very sick first treatment cases, are dangerous and should be avoided in relapse patients. If these agents are used without an effective "umbrella" of anti-tuberculosis drugs, they can cause serious spread of the tuberculosis.

We must not forget the value of old-fashioned bed rest. This unspectacular modality has helped untold thousands of patients in the past hundred years; in many cases it was the only treatment used. Bed rest, not all day but 18 to 20 hours a day, can reduce toxicity, improve resistance, and frequently allow a relapsed patient to "cool off" sufficiently, either to overcome his disease or to tolerate surgery.

Surgery does not have to be resection. There is still a place for thoracoplasty in patients with localized upper lobe cavitation, who are poor risks for resection. Plombage is a less effective, but also less drastic, procedure and may be used as a temporary expedient.

Any surgical procedure is more dangerous when performed on a patient who is excreting drug-resistant tubercle bacilli. It takes sound and mature medical judgment to decide whether to take a calculated risk or to leave a bad situation alone.

To sum up the treatment of relapse: There is no simple formula. Practically all

FEATURES

patients should be in a hospital. A first-line drug, not used before, should be given with either PAS or a comparable drug. Isoniazid may be given, hopefully, but may do no good. Only occasionally will very high doses of isoniazid (with 10 percent B6) prove helpful after regular doses have become ineffective. The best combination of

second and third team drugs should be used. Modified bed rest is an extremely valuable treatment. Collapse or resectional surgery is more hazardous in the presence of drug resistant tubercle bacilli, but can be carried out in selected cases. The best management of relapse is to try to prevent it by carrying out effective first treatment.

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Injuries of the Genitourinary Tract

WILLIAM T. SNODGRASS, M. D.

INJURIES OF THE KIDNEY

Injuries to the kidney vary from mild contusions to complete maceration of the renal mass. The majority of injuries occur between the ages of 20 and 40 years, corresponding to the period of greater activity. The kidneys, for the most part, are located in the bony chest cage receiving protection by the ribs, the lumbar spine, and vertebral muscles from most ordinary and moderate injuries.

In infants and children renal injuries are relatively more common due to a minimum of protective perirenal fat. Gerota's fascia, which serves as a buffer, does not develop early, and the kidney in young individuals lies directly against the peritoneum, which at times is tense and may easily rupture (1).

Injuries to the kidney are divided into two types: (1) open or penetrating, such as wounds due to stabbing, gunshot, or shell fragment, and (2) closed or non-penetrating. Non-penetrating injuries may be due to a direct force to the renal area, or to indirect force, such as a fall on the feet or buttocks.

For the purpose of evaluation and management, the non-penetrating renal injuries may be divided into three categories as described by Sargent and Marquardt (6).

(1) Minor injuries, or renal contusion, are parenchymal in character, without rupture of the capsule or tear into the renal pelvis. This type of injury causes transient hematuria and some renal pain, is not especially serious, and usually heals without surgical intervention. Pyelographic find-

ings in general are normal but there may be a temporary suppression of dye excretion on the involved side.

(2) Major injuries consist of parenchymal damage with rupture of the capsule or a tear into the renal pelvis or calyces. With parenchymal rupture, bleeding may be marked and perirenal hematomas are common. With rupture of the capsule, extravasation of urine occurs if the parenchymal tear involves the renal pelvis or calyces, demonstrable by intravenous or retrograde pyelography. Shock is usually present.

(3) Critical injuries involve the renal artery or one of its larger branches, or the renal vein. Shock is usually profound and the patient may die before reaching the hospital.

With penetrating injuries, especially gunshot wounds, damage to other organs is frequently present. Generally, the need for repair of these extrarenal injuries is of greater urgency than management of the kidney lesion.

SYMPTOMS:

The location of the wound and the presence of hematuria are usually the first indication of renal damage. The symptoms depend on the extent of the injury, but hematuria, pain, and abdominal rigidity are present in most cases. Secondary hemorrhage may occur two to three weeks after the injury and be of such severity that death may occur.

Pain is due to injury of the renal parenchyma, distention of the capsule, or passage of clots down the ureter. There is partial fixation and rigidity of the abdominal wall and a mass may be present due to hematoma or extravasation of urine (3).

From the Department of Surgery, Division of Urology, Washington University School of Medicine, St. Louis, Missouri.

INJURIES OF THE GENITOURINARY TRACT

DIAGNOSIS:

The history of injury, followed by pain in the side, a mass in the lumbar area, and hematuria usually indicate renal damage. Following correction of the primary shock, a positive diagnosis can be established by intravenous or retrograde pyelography. In all cases in which surgery is contemplated, pyelography is needed to establish the presence of a contralateral functionally sound kidney. If visualization by intravenous pyelography is inadequate for diagnosis, cystoscopy and retrograde pyelography should be done. The danger of introducing infection by the cystoscopic instrumentation is negligible when aseptic measures are observed. The value of the diagnostic gain far outweighs the danger of secondary instrumental infection (2).

TREATMENT:

Palliative treatment is sufficient and yields good results in the majority of both open and closed types of injuries. Bed rest is essential and careful observation should be made of the extent of hematuria, the amount of pain, and for evidence of infection.

The main point regarding any renal injury is whether exploration is necessary, and, if so, when. Hematuria, even though pronounced, is not an indication for surgery, but extravasation of urine and signs of continued renal bleeding usually require surgical exploration. Sepsis, with signs of an enlarging flank mass is an indication for surgical intervention. In most cases a period of observation will not increase the morbidity or mortality (3). (Figures 1 and 2).

INJURIES OF THE URETER

Throughout their course, the ureters are remarkably well protected from external trauma so that injury from external trauma, except from penetrating wounds is rare. However, intraureteral manipulation and pelvic surgery constitute a relatively frequent source of ureteral injury.

During pelvic surgery in the female, the position of the ureters with relation to the broad ligaments, the uterine arteries, and the cervix makes them vulnerable to operative injury (4).

RECOGNITION AND TREATMENT:

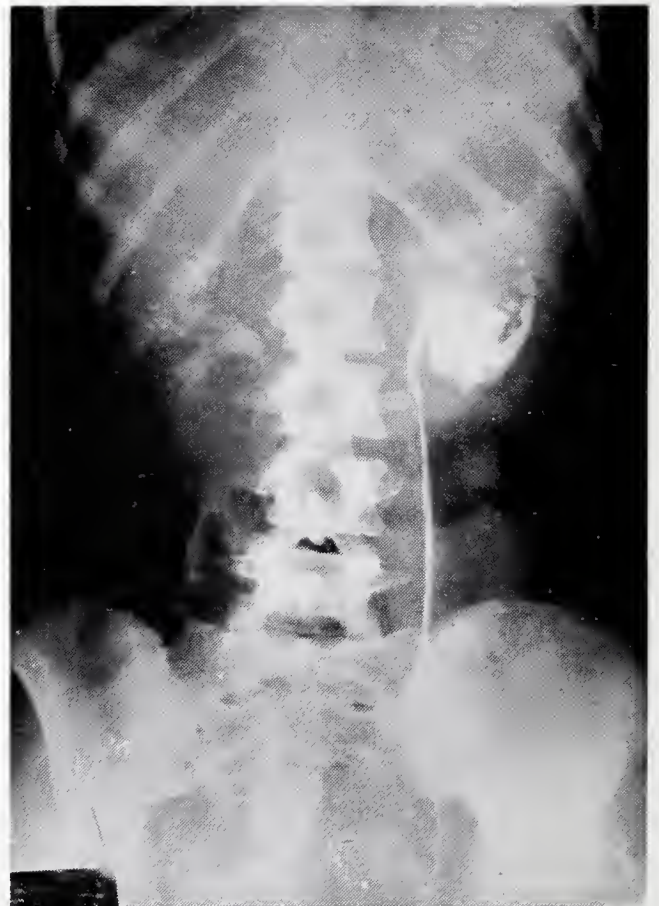
Injuries generally fall into two classifications, immediate or delayed. Either one

or both ureters may be involved and symptoms of delayed injury may appear within a few days or not be suspected for a considerable period, or not at all.

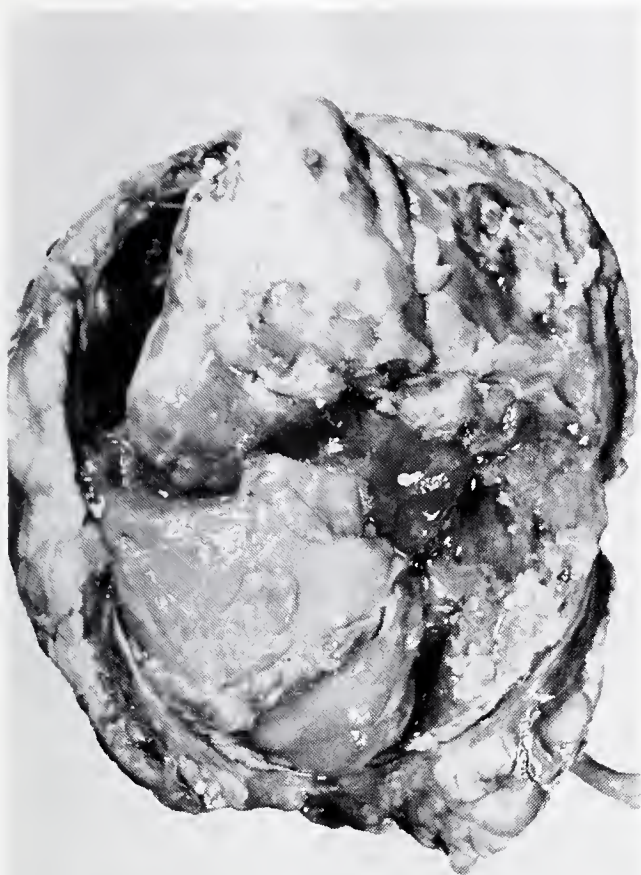
When ligation or transection is noted during surgery, immediate repair is indicated. Deligation with the passage of a splinting ureteral catheter is usually adequate. Sectioning is repaired by a direct end-to-end anastomosis over a splinting catheter (3).

The delayed signs of injury, often presenting as ureterovaginal fistulae, require a complete urological work-up. Treatment depends on the type of injury, the time elapsed since the surgery, and the location of the injury. Postoperative anuria following pelvic surgery is a genuine emergency requiring prompt evaluation and surgical

Figure 1: Kidney trauma. Seventeen year old girl in automobile accident. Immediate shock. Patient was explored transabdominally at another hospital and a retroperitoneal mass on the left was noted. On the second day she developed progressive signs of sepsis.



A: Normal right intravenous pyelogram. Retrograde study on left because of non-function shows complete destruction of normal configuration. Left nephrectomy on fifth day after injury.



B: Gross specimen. Extensive perirenal hematoma. Tear through mid-portion of the kidney with complete separation of the lower half of the kidney. Convalescence uneventful.

above the symphysis so that the bladder can be entered through an area not covered by peritoneum (3).

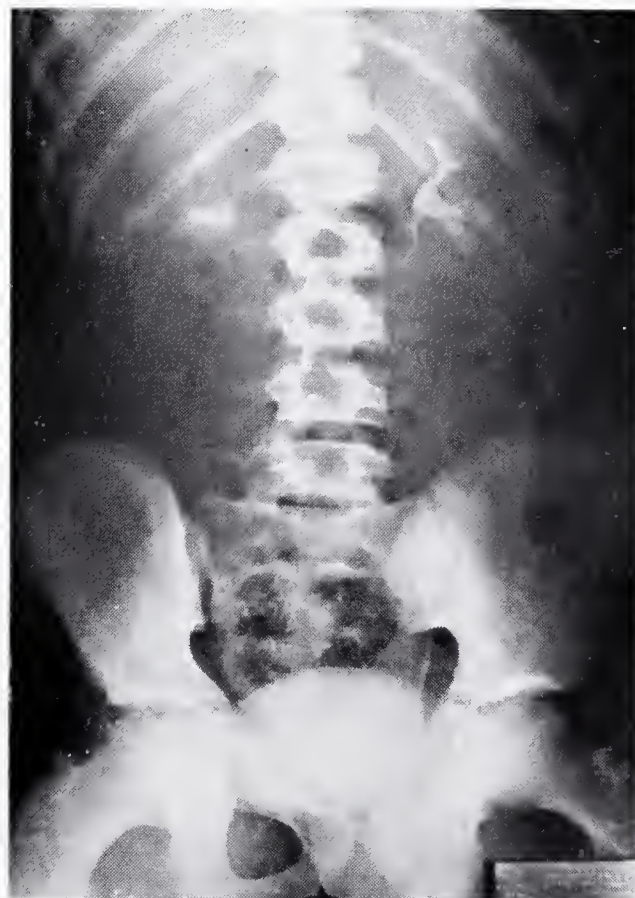
Injuries generally fall into two groups, wounds due to penetrating force from within or without, and rupture due to external force.

External penetrating agents include bullets, shell fragments, stabbings, and bone fragments. Internal penetrating agents include cystoscopes, resectoscope loops, sounds, lithotrites, and fulgurating electrodes.

Non-penetrating agents include a blow to the abdomen with the bladder distended, and distortion of the bony pelvis due to fracture.

Contusion is used to describe a non-perforating injury involving the mucosa, or the muscularis and serosa as well. Child-birth and surgery on organs adjacent to the

Figure 2: Kidney trauma. Ten year old boy fell from hayloft striking his right side. Gross hematuria, but no evidence of shock.



A: Immediate intravenous pyelogram. Normal left pyelogram. Evidence of function with extravasation of opaque medium on right. Treated conservatively.

intervention as soon as the diagnosis of bilateral ureteral occlusion is made. Nephrostomy drainage with definitive repair at a later date is often necessary. Early deligation may be accomplished in a few selected cases.

When ureteral occlusion is recognized during the postoperative period, surgical correction should be instituted before fistulae or permanent renal damage become evident.

If the ureter has been perforated during an intraureteral manipulation for stone, a splinting ureteral catheter for 48 hours will usually insure healing if no extravasation has occurred.

INJURIES OF THE BLADDER

Unlike most structures, the bladder is subject to considerable variation in normal size and shape by virtue of its distensibility. When the bladder is empty, peritoneum covers the entire lower abdominal wall down to the symphysis. With bladder distention the peritoneal reflection is raised



B: Intravenous pyelogram ten days later. Extravasation is more marked, but urine was now clear and temperature was normal. Conservative management continued.



C: Retrograde right pyelogram made three months after injury. Urine was clear and patient was asymptomatic.

bladder are frequent causes. Fractures of the bony pelvis which do not cause rupture nearly always produce sufficient trauma to cause contusion.

Intraperitoneal rupture denotes a complete break in continuity of the bladder wall with communication into the peritoneal cavity. There is free passage of urine, blood, and diagnostic fluids into the peritoneal cavity.

Extraperitoneal rupture denotes a break in continuity of that portion not covered by peritoneum, thus permitting escape into the perivesical tissues but not into the peritoneal cavity. This injury is commonly seen with fracture of the pelvis. Most extraperitoneal ruptures occur on the anteriolateral walls close to the bladder neck.

When sterile urine permeates undrained tissue, it produces necrosis and suppuration, which, if untreated, may be fatal. When the urine is infected the process of suppuration is accelerated (3).

Combined intraperitoneal and extraperitoneal rupture occurs especially with

perforating injuries. This type is common in war but it occurs less frequently in civilian life.

SYMPTOMS:

These consist of shock, lower abdominal pain, an extreme desire to void, but inability to do so, and progressive signs of toxicity. Abdominal rigidity and tenderness with increasing signs of peritonitis may be delayed for some time, thereby rendering early diagnosis difficult. Bimanual rectal examination may suggest the presence of extravated blood and urine.

DIAGNOSIS:

Essential to the diagnosis of perforation of the bladder is a high index of suspicion that this lesion may be present. The best method of diagnosis is by cystography in all suspected cases. Following the initial film the opaque dye is allowed to drain from the bladder, the bladder is lavaged, and another film is taken. This technique permits reliable diagnosis, and has the

advantage that it may be performed without turning the patient for oblique films (4). (Figures 3 and 4).

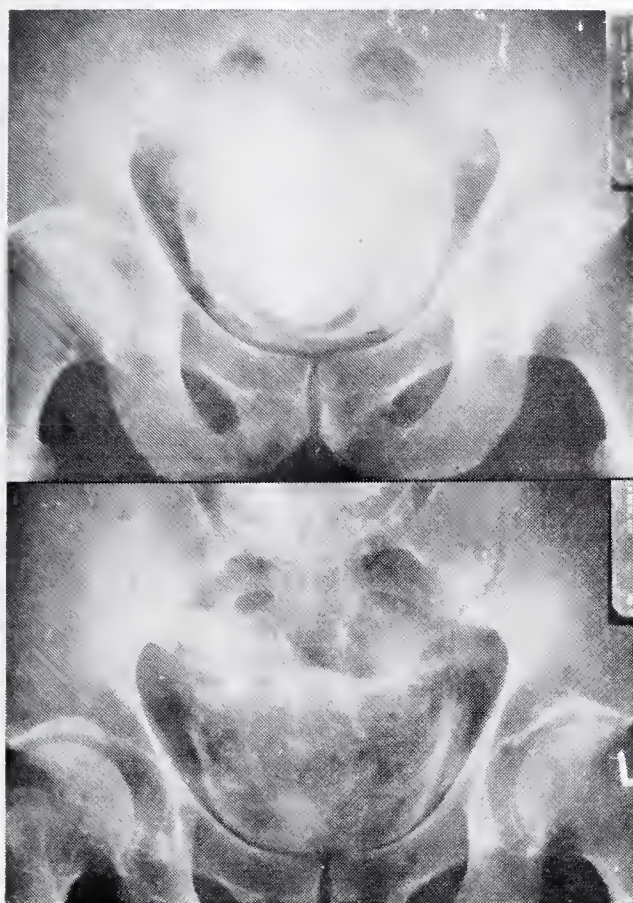


Figure 3: Extraperitoneal urinary extravasation following transurethral prostatic resection. Cystogram. Upper film shows bladder filled with opaque medium demonstrating extravasation. Lower film shows extent of extravasation following removal of opaque medium by catheter and lavage of bladder.



Figure 4: Intraperitoneal rupture of bladder. Opaque medium fills entire lower portion of peritoneal cavity.

TREATMENT:

In rupture of the bladder, it is imperative that preparation for surgery begin immediately. The most important step is the immediate establishment of suprapubic drainage using a large Pezzer or Malecot catheter.

The next important step is wide and thorough drainage of the perivesical space in extraperitoneal type of rupture and the aspiration of blood and urine from the peritoneum in the intraperitoneal type of rupture.

If, during pelvic surgery, the bladder is opened intentionally or inadvertently, the rent should be closed transperitoneally with a double layer of chromic catgut sutures and a urethral catheter inserted. Drainage by catheter should be maintained for a period of seven to ten days.

INJURIES OF THE PROSTATIC URETHRA

There is relative fixation of the urethra where it enters the urogenital diaphragm making the prostatic urethra more susceptible to injury with associated fracture of the pelvis. The diagnosis is suspected in all cases of pelvic bone fracture if difficulty is encountered in passing a catheter. Every case should be checked at once with a catheter before he attempts to void. If one is unable to pass a catheter, a urethrogram may be made using 15 per cent Urokon solution. The solution is relatively innocu-

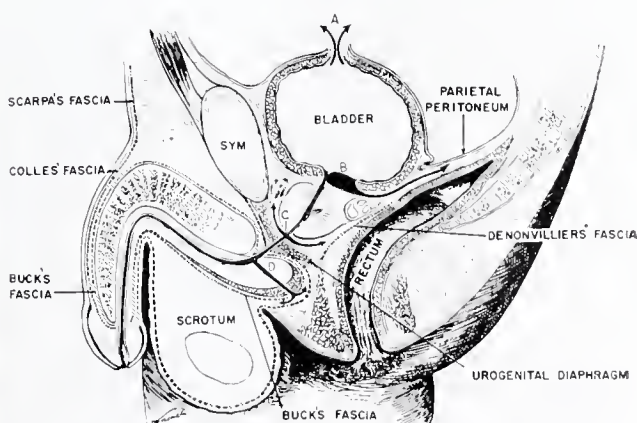


Figure 5: Fascial planes involved in commoner sites of extravasation of urine.

- A: Intraperitoneal rupture from dome of bladder.
- B: Commonest site of extravasation following transurethral resection.
- C: Commonest site of urethral injury accompanying fracture of pelvis.
- D: Commonest site of urethral rupture following passage of sounds and after periurethral phlegmon.

INJURIES OF THE GENITOURINARY TRACT

ous and will not cause tissue necrosis if drainage is instituted within a reasonable period of time (4).

Extravasation is retroperitoneal and requires surgical drainage retropubically. The continuity of the urethra is re-established by antegrade sounding and a Foley catheter is used as a urethral splint. Following healing, secondary strictures are common requiring dilatations at regular intervals.

INJURIES OF THE BULBOUS URETHRA

Injuries of the bulbous urethra may be due to the passage of sounds, shell fragments, or the more common straddle injury.

Since the involved area is below the urogenital diaphragm, extravasation will conform to the limits of Colles' fascia. Bleeding is frequently profuse with rapid hematoma formation. Extravasation of urine begins with the first attempt to void (Fig. 5).

Surgical treatment should be immediate to prevent extensive extravasation of blood and urine. Urinary diversion by means of suprapubic cystotomy is usually necessary. The urethra is splinted by a Foley catheter inserted at the time of cystotomy. There should be debridement and adequate drainage of all tissues involved by extravasation (5).

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All illustrations used, courtesy of J. J. Cordonnier, Clinical Urology for General Practice, C. V. Mosby Company, St. Louis, Missouri, 1956.

Consultation Services of the Anesthesiologist*

C. R. STEPHEN, M. D. **

Within recent years the specialty of anesthesia has been developing and expanding its responsibilities within the medical profession at a rapid rate. Preoperative visits to evaluate the physical and mental status of patients and postoperative care of the patient in collaboration with the surgeon are now an expected part of the anesthesiologic obligation. In many hospitals the anesthesiologist has assumed charge of the postoperative recovery room and is the principal organizer and consultant for the oxygen therapy department.

There are numerous areas of medical care, not related directly to the production of narcosis, in which the anesthesiologist, by virtue of his particular training, can be of special help. In an effort to improve the sometimes elusive factor of communication existent in our profession, several problems of medical, surgical or pediatric interest will be described in which anesthesiologic consultation may be profitable.

RESPIRATORY PROBLEMS

The abnormalities of respiration which lead to hypoxia or respiratory acidosis are well-known to the anesthesiologist. In the operating room he spends much of his time evaluating the nature and depth of the respiratory exchange of his patients. He is sensitive to the development of upper or lower respiratory tract obstruction, he is trained to observe depression of the respirations, and he is capable of augmenting the ventilation of the patient, or actually breathing for the patient, sometimes for hours at a time. Moreover, he has become familiar with various mechanical aids which will assist the spontaneous respirations of patients or provide artificial respiration for prolonged periods of time. In short, he is familiar with the physiology of respiration.

With this background of interest, it is easy to predict that the anesthesiologist can be of considerable help in evaluating, diagnosing and providing therapy for respiratory problems as they occur outside the

operating room. His range of participation may encompass several types of illness:

1) acute respiratory problems, as exemplified by acute upper respiratory tract obstruction, pulmonary edema or aspiration of foreign material such as regurgitated gastric contents. The anesthesiologist is able to establish a patent upper airway by inserting an intratracheal tube, thus allowing adequate oxygenation and providing a means for aspiration of the tracheobronchial tree. He is versed in ways of washing out the respiratory tree with saline and with methods of providing positive pressure breathing as required in a safe manner.

2) chronic respiratory problems, such as asthmatic conditions, chronic pulmonary fibrosis and pulmonary emphysema, with and without carbon dioxide retention. Often, when seen first, these chronic lung conditions are acute problems. On more than one occasion a semicomatose patient has been admitted to hospital with the diagnosis of a cerebrovascular accident, only to find that, with adequate therapy, the patient in actuality was suffering from carbon dioxide narcosis. The anesthesiologist is alert to this syndrome, he is aware of the dangers of oxygen administration in this condition, even though cyanosis exists, and he realizes that the proper method of therapy centers about improving the ventilatory exchange of these patients. He is cognizant of the advantages of tracheostomy in such seriously ill patients and knows how to obtain maximum benefit from intermittent positive pressure breathing apparatus. In situations where bronchospasm plays a leading role in the respiratory difficulties, he is competent to prescribe bronchodilator drugs such as isoproterenol, and to ensure that they are nebulized in the proper manner, or even administered intravenously in acute emergencies. An intractable asthmatic condition may require exposure to deep ether anesthesia on rare occasions.

3) respiratory depression due to drugs. Narcotic and barbiturate drugs are the most frequent offenders in this regard:

*Read at the Annual meeting of the Arkansas Medical Society, Pine Bluff, Arkansas, April 18-21, 1960.

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critical situations arise particularly when a despondent patient takes a relative overdose of such drugs. In addition to the application of respiratory and cardiovascular resuscitative measures, the anesthesiologist is competent to render pharmacologic advice concerning the drugs nalorphine and levallorphan which will antagonize specifically the effects of narcotic drugs. Moreover, he can point out the limitations and nonspecificity of action of such analeptics as megimide, Ritalin, Metrazol, and so on. In the therapy of such patients, a proper balance must be maintained between general physiologic support and specific pharmacologic application.

4) paralytic pulmonary problems, e.g. poliomyelitis, cervical fracture, Landry's paralysis. In these conditions there is often a question of when mechanical aid should be instituted to augment respiratory exchange, what type of aid should be employed, and when a tracheostomy will prove to be advantageous or even life-saving. The anesthesiologist now has means of determining with relative ease the tidal and minute volumes of patients; this information, along with his opinion, broadened by previous experiences, is helpful in determining the proper procedures in such patients.

Although the indications are becoming broader, there is still debate as to when a tracheostomy will be beneficial in a patient. It has often been stated that the time to do a tracheostomy is when one is in doubt as to whether it should be done. Tracheostomy will benefit a respiratory problem in one or more of the following manners:

- a) it will bypass all types of upper respiratory obstruction;
- b) it will reduce deadspace and thus allow more adequate alveolar ventilation;
- c) it will allow easy access to the tracheobronchial tree for thorough aspiration of retained secretions;
- d) it will simplify nursing care of the patient with respiratory problems. An important responsibility in the care of the tracheostomized patient is the realization that whatever air or gas the patient breathes through the tracheal opening must be adequately humidified. If hardening of secretions within the tracheobronchial tree is to be avoided, atmospheres

high in moisture content must be provided for the patient. Further protection can be afforded the patient by utilizing detergent solutions to help liquefy thickened secretions.

5) treatment of tetanus. It has been said that the precipitating cause of death in tetanus is hypoxia due to respiratory insufficiency. The syndrome itself, plus the respiratory depression induced by the necessary sedative drugs, often lead to inadequate alveolar ventilation. The importance of tracheostomy in these patients and the necessity for valiant measures, such as the administration of muscle relaxant drugs and the concomitant institution of mechanical control of respiratory exchange, can be evaluated efficiently by the anesthesiologist.

CARDIOVASCULAR PROBLEMS

Hypotension is one of the problems which the anesthesiologist is called upon to diagnose and treat from day to day in the operating room. He must decide, often in the space of a few minutes, whether the fall in blood pressure is due to decrease in blood volume, neurogenic reflex stimuli, direct myocardial depression, or other factors seen less frequently. Thus, his thoughts are oriented towards the factors which may initiate the syndrome of shock; outside the operating room he may be able to assist in such diagnoses. Moreover, he possesses the pharmacologic knowledge which enables him to prescribe the proper type of vasopressor drugs and anticholinergic drugs when these are indicated. He has learned that certain vasopressor drugs, such as methoxamine (Vasoxyl) and phenylephrine (Neosynephrine), produce their effects only by augmenting peripheral vasoconstriction; whereas other drugs, such as ephedrine, desoxyephedrine (Methedrine) and norepinephrine, exert their beneficial effects by a combination of peripheral vasoconstriction and direct stimulating effect upon the myocardium. In some instances, where cardiac output has been reduced by excessive action of the vagus nerve, the administration of anticholinergic drugs (atropine) will go far to restore homeostasis.

GASTRO-INTESTINAL PROBLEMS

One of the more vexsome problems seen in patients with abdominal disorders is that

of persistent hiccoughing. Usually the anesthesiologist is consulted after the various well-known and shop-worn remedies have been tried. Often he is able to help by the intravenous administration of small doses of chlorpromazine (up to 25 mg.). Should this therapy fail, he may attack the problem by performing a block of the phrenic nerve in the neck. Such procedures may give temporary relief while the underlying etiology is being treated.

CENTRAL NERVOUS SYSTEM

Uncontrolled restlessness due to factors other than pain is seen frequently in patients. Sometimes the cause is not obvious. Some type of sedation, perhaps lasting over a period of many hours, but which does not depress the patient unduly, is required. In such instances, consultation with the anesthesiologist may benefit the patient. Before definitive therapy is applied, one must be certain that hypoxia is not causing the restlessness: often, particularly in children, upper respiratory obstruction may account entirely for the condition: the administration of sedative drugs in such circumstances only adds insult to injury. In his pharmacologic armamentarium the anesthesiologist has access to drugs which will serve to quiet the non-hypoxic obstreperous patient. Small doses of apomorphine, paraldehyde, and some of the phenothiazine derivatives which can be given intravenously, are examples of such drugs.

OXYGEN THERAPY

It is now well-recognized that the administration of oxygen has widespread, beneficial applications: no longer is its application a sign of impending death. If oxygen is to be prescribed, it is important that it be used as efficiently as possible, so that the patient will receive maximum benefit from it. This statement implies that someone be available to ensure a proper technique of therapy. The anesthesiologist can be of definite aid under such circumstances. For example, he knows that a properly placed nasopharyngeal catheter, with 5 to 7 liters of oxygen running through it per minute, will provide as much oxygen for the patient as the average well-functioning large oxygen tent (about 35 to 40 per cent oxygen). He knows what types of apparatus will provide high degrees of relative humidity, and what patients will

benefit most from such an atmosphere. He is in a position to judge when a patient requires not only oxygen, but also some type of assistance to his respiration, so that the oxygen can be transported in adequate concentration to the alveoli of the lungs and hence to the pulmonary blood stream. He is an expert consultant on matters pertaining to inhalation therapy.

PAIN PROBLEMS

The patient with chronic pain presents one of the most intriguing and frequently one of the most exasperating problems in medical science today. All diagnostic attempts may be fruitless and therapeutic measures therefore may be empirical. In some of these patients the anesthesiologist may be able to offer some help. Diagnostic blocks of somatic or sympathetic nerves may provide a clue to the etiologic factors involved. Another useful diagnostic tool is the differential spinal block. In this procedure, particularly helpful for lower extremity and low back syndromes, a local anesthetic block of the sympathetic, sensory and motor outflow from the subarachnoid space can be obtained in sequence by injecting solutions of gradually increasing concentrations of local anesthetic every 10 to 15 minutes. Sometimes pain is relieved with the injection of the control saline solution! At other times the pain may persist after all injections, even though complete sensory and motor paralysis is present!

In some patients repeated blocks of somatic or sympathetic nerves may be of lasting benefit to the patient. Such therapeutic measures appear to be of most value in patients with sympathetic dystrophy or in those with a causalgic-like syndrome. The role of the anesthesiologist in the diagnosis and treatment of these pain problems sometimes is most striking.

CONCLUSION

Enough has been said to indicate that today's anesthesiologist is a physician who has much to offer in providing care for the patient outside as well as within the operating room. His pharmacologic knowledge is well worth testing; his familiarity with the reactions of drugs on various organ systems is almost second nature. His physiologic background, particularly in the realm of respiration, is of special value. He can speak with authority on the relative merits

and proper application of resuscitative procedures ranging from the simple, unadulterated mouth-to-mouth respiration to that which employs complicated mechanical apparatus.

The anesthesiologist will continue to keep abreast of new, pertinent developments. His leadership in the application of hypothermia may be cited as only one exam-

ple. In the treatment of head injuries, patients who have suffered severe hypoxia, or in those in whom cerebral edema is to be avoided, the advantages of reducing body metabolism by reducing body temperature are opening up new vistas of therapy. The anesthesiologist is familiar with the physiologic reactions associated with this technique and is ready to be of assistance whenever called.

Tired Blood*

ALBERT B. HAGEDORN, M.D.

We are living in the day of the apothegm—a time when brief statements and catchy phrases characterize our common thoughts. By means of television we daily hear about the “lazy bowel,” the “sluggish liver,” “strained eyes,” “sagging muscles,” “weak kidneys,” “starved tissues,” and “tired blood.” I have chosen to discuss the latter.

According to those who advertise, “tired blood” is a synonym for “iron-deficiency anemia.” There is an inference that this state is universal and is characterized by excessive fatigue, irritability, lack of accomplishment, and downright apathy, in no matter what degree the condition exists. It is important to recognize at this point that in the minds of many physicians as well as many of the laity, fatigue is equated with anemia. What are the facts?

THE MEDICAL ENTITY

Iron-deficiency anemia can be defined medically as anemia due to depletion of iron stores. This may result from (1) inadequate supply, (2) insufficient absorption, (3) abnormal utilization, or (4) excessive loss.

From a practical standpoint we need consider only the first and the last of these, as the other two—insufficient absorption and abnormal utilization—result from special circumstances and are relatively rare clinical entities. Inadequate supply of iron is usually a dietary difficulty and is of concern primarily to the pediatrician; increased loss of iron from the body is due almost invariably to loss of blood and is of concern to all physicians.

Although iron-deficiency anemia may be the most common anemia, it is not universal. There are no accurate figures as to its incidence in the general population, but estimates of from 5 to 20 per cent have been given.

Symptoms.—Like any anemia of sufficient degree, iron-deficiency anemia may be accompanied by weakness, palpitation, and dyspnea. Fatigue, per se, is a subtle

symptom and is difficult to evaluate. Often it is of environmental or functional origin rather than secondary to organic change. Following acute blood loss many symptoms may occur; but with chronic blood loss and consequent physiologic adaptation, symptoms may be absent. I do not know how low the hemoglobin level must fall before significant symptoms can be attributed to this change. I am reluctant to attribute any symptoms to anemia with a hemoglobin level above 10 gm. per 100 ml. of blood, and I suspect that in most cases much lower levels must be present before symptoms occur. Let me illustrate.

Case 1.—A 45-year-old white woman came to our clinic with the complaint of paleness. Two days previously some relatives who had not seen her for 18 months had been impressed with “how pale she looked” and had advised her to seek medical consultation. She insisted she felt perfectly well. She worked 40 hours a week as a hotel chambermaid. She had not missed a day’s work for more than a year. In addition, she managed her own home and cared for her eight children, whose ages ranged from 9 to 20 years. Every Saturday night she attended a local dance, and—to quote her—“never missed a dance.”

The hemoglobin concentration was only 5.6 gm., but the erythrocyte count was 4,670,000 per cubic millimeter of blood. A peripheral blood smear showed marked hypochromasia of the red blood cells. The serum concentration of iron was very low, measuring 13 micrograms per 100 ml.

The history revealed that the patient was gravida XI, para VIII. Currently she had regular menses about every 5 weeks with a flow of 3 days easily controlled with tampons. She did have large hemorrhoids which had bled grossly almost daily for more than 12 years.

Complete clinical and laboratory studies revealed no other pathology. She responded promptly to medicinal iron. When the hemoglobin concentration was 12.6 gm. hemorrhoidectomy was performed.

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FOUR PROBLEMS

It is not the intent of this presentation to deal with all the problems of iron-deficiency anemia. However, there are four points I would like to discuss: (1) the role of menstruation in the etiology of this condition, (2) the use of radiochromium in evaluating bleeding from the gastrointestinal tract, (3) the place of abdominal exploration in this condition, and (4) the problems of parenteral therapy.

Menstruation.—Abnormal or prolonged menstruation is probably the most significant single contributing cause for iron-deficiency anemia in the female. It is obvious that this may result from functional uterine change, fibromyomata uteri, carcinoma, ovarian or other endocrine dysfunction, or a primary hematologic condition. Appropriate studies must be made for accurate classification of the etiologic factor or factors involved. However, evaluation of the menses itself is another matter. It is most difficult to determine what constitutes a normal menstrual blood loss. One cannot rely on the patient's own statement that her menses are normal. Most women—and many physicians—have little conception of what constitutes normal menses. It is reasonable that the majority of women are aware only of what has been usual for them. If one has had heavy or excessive bleeding from menarche, it is understandable that she should consider such bleeding normal, especially if no change has occurred over the years. It is also true that many women disregard the fact that they pass clots, assuming this to be normal. Since a significant amount of blood is necessary for clot formation, the physician should always inquire into this source of blood loss.

In 1937, Fowler and Barer¹ reported on 11 women with hypochromic anemia who considered their menses to be normal. Using cumbersome extraction technics, the investigators found an average blood loss of 263 ml. per woman, with one losing 922 ml. Moore and Dubach² have reported on two medically-trained women with hypochromic anemia who lost more than 200 ml. of blood per period and were unaware that the blood loss was unusual. It has been estimated that the amount of blood lost in a normal menstrual period is not more than 80 ml. and usually is less than 50 ml.³ With

this fact in mind, it is easy to see how anemia could develop in the cases cited by Fowler and Barer^{1, 3} and by Moore and Dubach².

Recently my colleagues and I checked the menstrual blood loss in the cases of four women with iron-deficiency anemia who considered their menses to be normal. Our method of study was simple, but it required a radioisotope laboratory. We labeled the blood of these patients with radio-iron (Fe^{59}) prior to menstruation. Subsequently we collected all the menstrual pads and tampons they used during the time of menstruation and determined the amount of radioactivity emitted by this material. This was measured in a closed carton utilizing a direct-counting chamber. By means of a simple calculation, referring to the amount of radioactivity emitted by a specific quantity of the patient's circulating blood, the number of milliliters of blood represented by the radioactivity of the menstrual pads was determined.

The loss in our four cases averaged 366 ml. per period, with a range from 254 to 579 ml. Remember, each considered her menstrual period to be normal. In addition, two of these patients were specifically evaluated by experienced physicians who came to the conclusion that the menstrual losses were indeed normal and were not the basis of the iron-deficiency anemia present.

Radiochromium.—It is not always an easy matter to demonstrate active bleeding from the gastrointestinal tract. When a specific lesion is suspected but findings from roentgenographic examination are negative, radiochromium studies may be of value in demonstrating blood loss. Positive results from this method constitute indirect evidence that a specific lesion exists, and in unexplained iron-deficiency anemia this may be extremely important.

In such a study the patient's blood is tagged with Cr^{51} and all subsequent stools are collected and checked for radioactivity. If any bleeding occurs, it will be manifested by radioactivity in the stools. Again, by means of a conversion scale, the milliliters of blood in the stools can be determined. In case of intermittent bleeding—which often is the case—it may be necessary to collect the stools for long periods before blood loss

shows up. The following report is illustrative.

Case 2.—A 55-year-old housewife complained of symptoms of a dumping syndrome following a gastric resection carried out for peptic ulcer 5 years previously. A few months after the resection anemia had been noted, and it had been considered pernicious in type. She had failed to respond to parenteral liver injections. Subsequently intramuscular iron had been given, and the hemoglobin had risen from 37 to 85 per cent.

On examination at our clinic, no significant abnormalities were discernible. However, the hemoglobin was 8.4 gm., the erythrocyte count was 3,700,000, and examination of the blood smear showed hypochromasia. Histamine-fast achlorhydria was present. X-rays of the small bowel and colon gave no evidence of abnormality. A stomach X-ray and gastroscopic examination showed a normal anastomosis and no evidence of stomal or other ulceration.

The patient's erythrocytes were labeled with radiochromium and the loss of blood in the stool was quantitated during the following 7 days as follows:

Day:	1	2	3	4	5	6	7
Blood loss, ml.:	1	4	24	21	5	36	11

This gave unequivocal evidence that bleeding was occurring — presumptively from a specific lesion in the gastrointestinal tract. Abdominal exploration was advised and carried out. At operation the gastrojejunostomy appeared normal, but there was a small bluish nodule 20 cm. distal to the anastomosis. This was excised; and the pathologist reported it to be a cavernous hemangioma involving the mucosa and submucosa, forming a mass 1 mm. by 8 mm. by 5 mm. The patient made an uneventful postoperative recovery, and after administration of iron her hemoglobin concentration returned to normal. One year later the hemoglobin still was normal.

Abdominal Exploration. — Not infrequently the medical history and clinical workup fail to reveal a cause for iron-deficiency anemia. As indicated in my beginning statements, this condition in the adult almost always represents blood loss. It is the obligation of the physician to demonstrate the cause of the blood loss and

to remove it if possible. Treating iron-deficiency anemia without demonstrating a cause is tantamount to malpractice. If all findings from investigation are negative and the iron-deficiency anemia is of significant proportions, abdominal exploration may be indicated. Such a case has already been cited.

We have just reviewed the experience at our institution in 100 consecutive cases seen prior to 1958 in which abdominal exploration for iron-deficiency anemia was carried out after attempts to demonstrate a lesion had failed. In 30 per cent of the cases a positive lesion was demonstrated at surgery and treated; in 20 per cent an equivocal lesion was found; in 50 per cent of those explored no lesion was demonstrated. Although these results are not startlingly good, it is important to recognize that the surgery was almost certainly life-saving in the majority of the cases in which a lesion was found.

Parenteral Administration of Iron. — When therapy for iron-deficiency anemia is indicated, oral administration of iron is the treatment of choice. There is no scientific justification for using Vitamin B₁₂, liver shots, hexavitamins, or multiminerals in pure iron-deficiency anemia. Only iron is effective. Plain ferrous sulfate usually is adequate.

When it is necessary or desirable to administer iron parenterally, intramuscular injection is to be preferred. This may be useful when the hemoglobin concentration is very low and a rapid return to a normal level appears desirable. It is preferred to blood transfusions when only iron is deficient. Whereas one unit of normal blood contains approximately 250 mg. of iron, 250 mg. can be injected with little discomfort into each buttock of an adult for a total dose of 500 mg. at one time, and this may be repeated daily until the desired amount is given. Rarely is more than 2,000 mg. of iron indicated. Because of the method of packaging the iron, we usually decide on a dosage of either 1,000, 1,500, or 2,000 mg., depending on the severity of the anemia.

However, some words of caution should be given when parenteral administration is recommended. First, reactions do occur, although they are infrequent and usually

mild. They may be manifested as urticaria, diffuse myalgia, arthralgia, abdominal cramping, backache, vasomotor collapse, and fever.

Second, almost all parenterally administered iron is retained by the body. An indiscriminate amount or an overload may lead to hemosiderosis and possibly some pathologic change.

Third, improper administration may result in staining of the skin, and this can be embarrassing to the physician as well as to the patient. It cannot be overemphasized that this material must be given as deep as possible into the muscle of the buttock, and special care taken to prevent leaking along the path of the needle.

Fourth, Haddow and Horning⁴ have recently reported carcinogenic activity in rats and mice from a parenteral iron preparation. Although these observations cannot be transferred to man, they emphasize the need for caution. It seems important to limit parenteral administration of iron to those instances in which a definite need is indicated and oral medication is inappropriate.

SUMMARY

Fatigue is a difficult symptom to evaluate. Often it is not present in anemic patients.

Excessive menstrual loss of blood may be the cause of iron-deficiency anemia even though the menstrual history is not impressive. We have noted a simple method for checking the amount of blood lost by this route.

Radiochromium studies may give evidence of bleeding from the gastrointestinal tract when other means fail.

Abdominal exploration should be considered in iron-deficiency anemia when appropriate studies fail to yield a cause.

Caution should have its place in the prescription for parenteral administration of iron.

"Tired blood" is not an appropriate medical term.

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Thyrotoxicosis in Elderly People

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INTRODUCTION

The distressing symptoms and striking signs of classical hyperthyroidism make it an easily recognizable disease. Charcot⁷, in 1885, and Chvostek⁸, in 1887 called attention to the fact that some hyperthyroid patients have few signs and symptoms and are therefore difficult to diagnose correctly. During the late 1920's interest in this subject became more widespread when Lahey²⁰ and others^{13, 15, 23} emphasized that elderly people with thyrotoxicosis are prone to present few symptoms. They variously describe this condition as thyrocardiac disease, apathetic hyperthyroidism, masked hyperthyroidism, and atypical hyperthyroidism.

Despite this general long-standing knowledge of the existence of symptom-poor thyrotoxicosis, it is still frequently missed by physicians. Many patients suffer for several years and consult several physicians before their disease is correctly diagnosed and treated. That cardiac failure or diarrhea may mask the primary disease is illustrated by cases one and two respectively.

ILLUSTRATIVE CASE 1

A sixty-three year old white lady had known that she had a goiter for twenty years. She had been almost continuously in congestive heart failure despite treatment for three years. She lost twenty-five pounds of weight during the year prior to admission.

She had a fine tremor of the fingers and her skin was dry and warm. She showed evidence of recent weight loss. Her vital signs were: temperature 99°F, pulse 112 per minute, respirations 42 per minute, and blood pressure 168/78. There was no exophthalmus. A multinodular mass which moved vertically on swallowing was found in the neck anteriorly. There was no murmur over it, and it measured 5X8 cm. on the right side and 3X8 cm. on the left. Fine moist rales were audible at both lung bases. An irregular rhythm and a grade one apical systolic murmur could be heard over the

enlarged heart. The liver edge was palpable four cm. below the right costal margin. There was two plus pretibial edema.

The venous pressure was 140 mm. of saline and increased to three hundred mm. of saline with liver pressure. The circulation time was fifteen seconds. An EKG showed atrial fibrillation and a left bundle branch block. An X-ray of the chest confirmed the presence of cardiomegaly and pulmonary congestion. The BMR was plus 45% and the I₁₃₁ uptake was markedly increased.

In the hospital the patient was treated for congestive cardiac failure and advised to have a subtotal thyroidectomy after the thyrotoxicosis should have been controlled by antithyroid drugs. She refused surgical therapy; hence, she was given thirty millicuries of I₁₃₁. Six weeks after her hospital discharge the heart failure recurred and there was no evidence of improvement in the thyrotoxicosis. Tapazole, 50 mg. daily in four divided doses and ten minims of Lugol's solution after each meal were started and the patient gradually gained ten pounds of weight. Her symptoms subsided and have continued to be minimal as she continues to take Tapazole.

ILLUSTRATIVE CASE 2

A sixty-one year old white lady had unexplained severe intermittent diarrhea for fifteen years. During the last three years of this period she also had tachycardia, palpitation, extreme weakness and weight loss (sixteen pounds) despite frequent hospitalizations.

This extremely weak and chronically ill patient's vital signs were: temperature 100°F., pulse 136 per minute, respirations 24 per minute, blood pressure 150/65, weight 96 pounds. A grade one systolic murmur was audible at the apex of her enlarged, rapidly beating heart. She had two plus pretibial edema. Except for tenderness on motion of her knees, hips, and shoulders, there were no other pertinent physical findings.

Chest X-rays confirmed moderate cardiomegaly. An EKG showed changes of

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ischemia. BMR's were plus ninety-seven and plus seventy-eight, and the I_{131} uptake was more than twice normal. The serum albumin was 2.66%, and the serum globulin was 3.78%.

Propylthiouracil six hundred mg. per day was started, and during the next four and one-half months the patient regained her strength and eighteen pounds of weight. Her symptoms were relieved, and the BMR fell to plus 14%. Then she was hospitalized and given Lugol's solution, ten minims thrice daily for three weeks following which a subtotal thyroidectomy was done. She had an uneventful recovery, and for the past six years she has had no further difficulty.

The primary purposes of this paper are: (1) to re-emphasize the fact that thyrotoxicosis in elderly people may present a picture which is entirely different from classical Graves' disease and (2) to review the manifestations which characterize this variant of hyperthyroidism.

MATERIALS AND METHODS

To serve as supplementary background material, the literature on this subject was reviewed. Also the records of all hyperthyroid patients over sixty years of age who were treated at the University of Arkansas Medical Center during the ten years from July 1, 1948, to July 1, 1958, were reviewed. There were 265 cases of hyperthyroidism and twenty-four (9%) were in patients over sixty years of age. The latter twenty-four records were studied to determine the symptoms, physical findings, laboratory data, treatment and response to therapy of these elderly patients. The age of sixty years was arbitrarily chosen as a dividing line because of a review of the literature indicated that most of the thyrotoxic individuals above this age have the apathetic variety of the disease. Those records which contained inadequate follow-up data were supplemented by personal communications with the patients and their referring physicians.

ANALYSIS OF DATA

Age, Sex, and Race

The ages of the twenty-four patients selected for study ranged from sixty to eighty-eight years. Three (12.5%) were men, and twenty-one (87.5%) were women. Nine (27%) were negroes, and sixteen (73%) were caucasian.

DURATION OF GOITER AND DURATION OF SYMPTOMS

Four (16 $\frac{2}{3}$ %) of these patients were not aware of any mass in their necks, but the remaining twenty (83 $\frac{1}{3}$ %) had known that they had a goiter for periods ranging from four months to thirty-five years. The average known duration was seventeen years. Symptoms which in retrospect were attributable to hyperthyroidism had been present for ten years or more in three patients (12%), for five years or more in seven (29%), for three years or more in twelve (50%), and for one year or more in eighteen (75%) patients before the correct diagnosis was made. The average duration of unrecognized toxic symptoms was three and one-half years. All of the seventeen long-standing nodular goiters had been present for several years before symptoms of toxicity developed. Five of these (30%) became larger concomitantly with the onset of toxic symptoms.

SYMPTOMS

Symptoms of cardiac disease, unexplained weight loss, muscle and joint pain, weakness, fatigability, and gastrointestinal complaints—these and other complications of long-standing toxicity replaced or masked the usual symptoms of classical Graves' disease. The relative frequency of symptoms is indicated in figure one.

Weight loss was the only feature exhibited by all patients. Five people (21%) did not know how much, but the others had lost from seven to sixty-five pounds, the average decrease in weight being thirty-three pounds since the onset of their toxicity.

The symptoms usually associated with classical Graves' disease were minimal or absent. Indeed complaints such as exertional dyspnea, orthopnea, pedal edema and nocturia constituted the primary reason for seeking medical aid in eighteen (75%) of these patients. Four (16 $\frac{2}{3}$ %) of these people also had angina pectoris. Palpitation was a prominent symptom in sixteen patients (66 $\frac{2}{3}$ %), and twenty-two (91 $\frac{2}{3}$ %) had either palpitation, congestive heart failure, or both.

Weakness and easy fatigability were present in marked degree in twenty-one individuals of this group. Most of the patients attributed these symptoms to "old

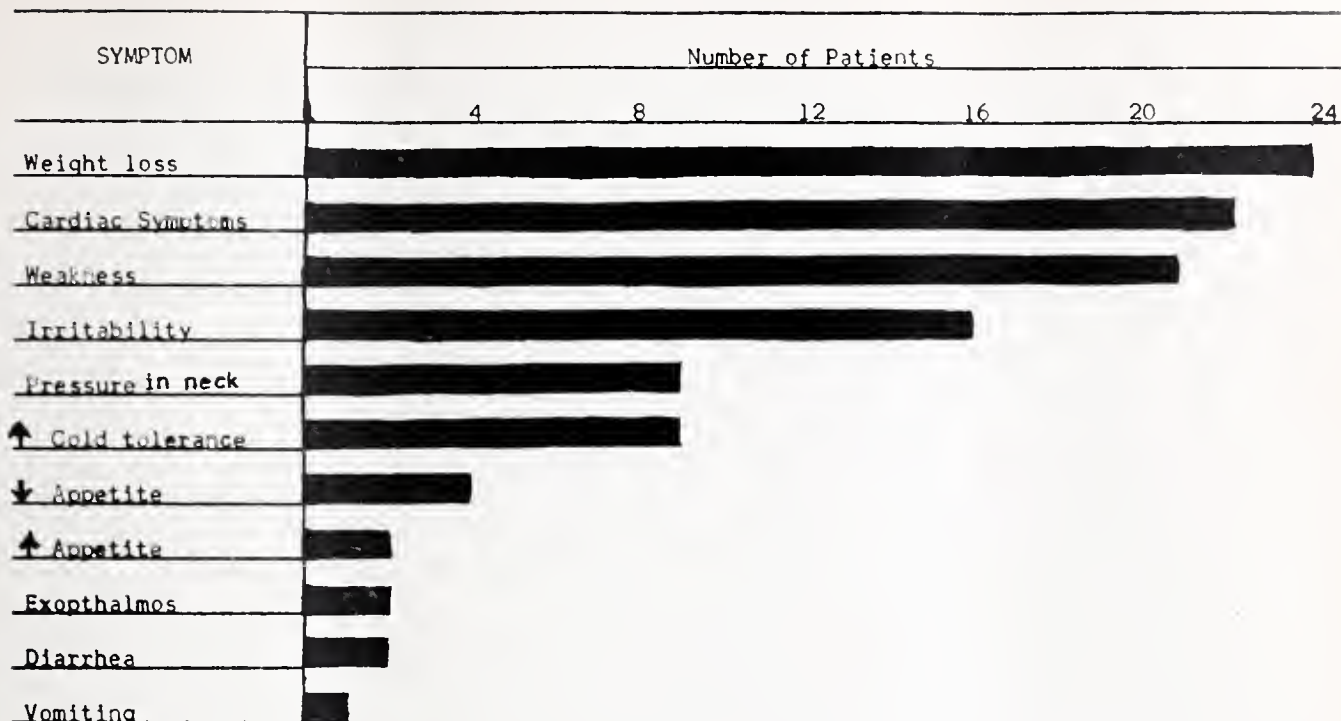


Figure 1

The most frequent symptoms in this group of patients are those of the complications rather than those of the underlying or "masked" thyrotoxicosis.

age" or to "heart trouble", but all of them complained of aching pains in joints and muscles. Myositis may be associated with hyperthyroidism in the aged.⁵

None of the individuals complained of extreme tremulousness or emotional instability, but specific questioning revealed that sixteen (66 $\frac{2}{3}$ %) of them had noticed increased "nervousness" and irritability since the onset of their difficulties.

Severe gastrointestinal symptoms were not frequent in this series, but intractable diarrhea was the chief presenting complaint in two patients (8 $\frac{1}{3}$ %). Unexplained intermittent diarrhea had been present for more than a year in two others. Intractable vomiting was one person's chief presenting symptom. Almost all of the patients had mild non-specific abdominal symptoms such as epigastric discomfort or occasional cramps.

Six patients (25%) complained of choking, two (8%) were hoarse, and two (8%) had dysphagia.

ASSOCIATED DISEASES

Diabetes occurs with slightly increased frequency in aged thyrotoxic individuals, and it tends to be labile¹⁷. There were two

(8 $\frac{1}{3}$ %) diabetics in this series.

Two persons had severe arthritis in addition to hyperthyroidism. Muscle biopsies were not done to confirm the presence of myositis⁵, but weakness and muscle pain were present in over 80% of cases. Neither were lymph node biopsies done to detect hyperplasia²⁸. Pyelonephritis duodenal ulcer, inguinal hernia, bronchiectasis, chronic leg ulcers and carcinoma of the cervix were found in one patient each. Arteriosclerosis and essential hypertension were probably present in a number of cases, but they were not specifically diagnosed in the records.

PHYSICAL, X-RAY, AND EKG FINDINGS

Twenty-one (91 $\frac{2}{3}$ %) of the patients did not appear clinically thyrotoxic. All of them showed evidence of recent weight loss, and sixteen (66 $\frac{2}{3}$ %) were emaciated. As figure two illustrates, the most frequent findings were not those of typical Graves' disease but those of the complications of longstanding masked thyrotoxicosis. Only two persons (8 $\frac{1}{3}$ %) in the group had exophthalmus, lid lag, and impaired convergence. Twelve patients (50%) had a fine tremor of the fingers, but older people with normal thyroid function frequently have tremors.

The thyroid gland was not palpable in one patient. In one case it was only slightly enlarged diffusely, and in one it was massively enlarged in a diffuse manner,

THYROTOXICOSIS IN ELDERLY PEOPLE



* Premature Ventricular Contractions

Figure 2

This graph indicating the relative frequency of pertinent findings on physical examinations, X-ray and electrocardiogram emphasizes that aside from the enlarged thyroid gland, the most outstanding and frequent findings are those of the complications rather than of classical hyperthyroidism.

measuring 10X10X20 cm. The remaining twenty-one (87½%) patients had nodular goiters varying from a solitary 1X1X1 cm. nodule to multinodular masses measuring 5X7X8 cm. in diameter. Pulsations and murmurs were detected over the gland in twelve cases (50%).

The pulse rate varied from seventy-eight per minute to 140 per minute with an average rate of 110 per minute. The pulse was not bounding or snapping character in any case. The blood pressure varied from

140/40 to 240/140. The average systolic pressure was 173 mm.Hg., and the average diastolic pressure was 90 mm.Hg.

Cardiomegaly in some degree was found and confirmed by chest X-ray in twenty-one cases (87½%). Auricular fibrillation, confirmed by EKG, occurred in eight (33⅓%) of cases, and frequent premature contractions occurred in three additional cases. A systolic apical murmur was present in fifteen (62½%) of the patients varying in different cases from grade one to grade four in intensity. The EKG was definitely abnormal in twenty (83⅓%) patients.

There was X-ray evidence of tracheal compression in ten patients (41⅔%), of calcification within the thyroid gland in five (21%), and of substernal extension of the gland in two (8⅓%).

LABORATORY DATA

Multiple basal metabolic rate determinations were recorded on all except two patients. The values ranged from plus 15% to plus 137%, and the average BMR reading was plus 52%.

Protein bound iodine determinations were done on twelve (50%) of patients in whom no history of iodine intake in any form could be elicited. The serum levels ranged from 8.7 mg% to 18.2 mg%, averaging 12.3 mg%.

Radioactive Iodine (I¹³¹) uptake studies were done in thirteen patients (54%), and the results were in the hyperthyroid range in all instances.

The blood cholesterol level ranged from 119 mg% to 221 mg%, averaging 157 mg%.

The total serum proteins ranged from 5.76% to 7.35%, the ratio of albumin to globulins being normal or approximately 2:1 in nineteen (79%) instances and altered to approximately 1:1 in five (21%) cases.

THERAPY

In patients who had congestive heart failure or other conditions requiring attention, appropriate therapy such as digitalis, diuretics, bed rest, oxygen, or sedation was instituted at once.

Fifteen (66 $\frac{2}{3}$ %) patients were treated initially with propylthiouracil in doses of three hundred to eight hundred mg. daily for periods ranging from two months to one year. All fifteen of them experienced remarkable improvement as indicated by return of the weight to normal, better sense of well being, abatement of cardiovascular symptoms, slowing of the pulse, and return of laboratory findings to normal. Three additional patients were started on propylthiouracil, but one died of heart disease within twenty-four hours. The other two discontinued their medication against advice and followed a progressive downhill course to death within two years according to reports by their local physicians.

Twelve people who became euthyroid on propylthiouracil were then given fifteen minims of Lugol's solution three times daily for two weeks and subjected to subtotal thyroidectomy. There were no operative complications or operative mortality, and hyperthyroidism was controlled initially in

all cases. One patient developed recurrent toxic goiter three years postoperatively and was satisfactorily treated with I¹³¹. She died of arteriosclerotic heart disease five years postoperatively. One case of hypothyroidism developed one year postoperatively but it was easily controlled by administration of desiccated thyroid. One person remained well for two years postoperatively and died of cerebral hemorrhage. Nine of the twelve surgical patients have remained euthyroid to the present time, one to ten years postoperatively, and have developed no complications.

Seven patients including one with recurrent disease after surgery were treated with radioactive iodine in doses ranging from three millicuries. Four of them obtained an excellent response. Their symptoms were relieved, and they regained their normal weight and sense of well-being. They have remained euthyroid as determined by clinical laboratory studies. In one case propylthiouracil was started for unknown reasons two weeks after administration of thirty millicuries of I¹³¹. One lady expired of heart disease two weeks after initial dose of three millicuries of I¹³¹ and one patient was lost to follow up after she was given ten millicuries of I¹³¹.

DISCUSSION

During the past seventy years, there has been a gradual increase in number of reports on occult hyperthyroidism in older patients associated with or obscured by symptoms attributable to diseases of other systems. Thus, hypertension, congestive heart failure, angina pectoris, idiopathic auricular fibrillation, pernicious vomiting, intractable diarrhea, myositis and diabetes mellitus have all been reported to mask thyrotoxicosis in people past middle age. The common denominator in all of these cases is the poor ability of certain older patients to respond to abnormally increased thyroid hormone production and thus to exhibit the usual signs and symptoms of Graves' disease. Having few or no symptoms of classical thyrotoxicosis, the patients suffer from insidiously progressive disease until complications of long standing toxicity such as severe unexplained weight loss, muscle and joint pain due to extreme weakness, or symptoms of aggravated cardiovascular or gastrointestinal disease or

diabetes cause them to seek medical aid^{11, 22}.

It should be emphasized that elderly patients may have the classical or "activated" type of disease, and conversely an occasional middle age person may develop the masked or "apathetic" form. That the latter is to be expected in older people, however, is illustrated by this study as well as many series of cases reported in the literature^{1, 3, 6, 9, 12, 15, 16, 19}. In most reports, the symptoms, physical findings and laboratory data are comparable to those found in this study. Bartels^{2, 3} and Magee²⁴, in studying this problem, have compared the manifestations of nodular and diffuse toxic goiter. They found minor variations in the incidence of various manifestations, but both types of disease are most often masked in older people. With increasing age, a progressively higher proportion of these patients have nodular or adenomatous goiters³.

The incidence of thyrotoxicosis in elderly people is increasing. Iverson¹⁸ found that in 1926, 3% of all hyperthyroidism occurred in patients over sixty years of age, and by 1948 the incidence had increased to 12%. In 1948, Seed²⁷ found that 17.4% of his cases were over sixty years old. Better recognition of the masked form by physicians together with the greater portion of elderly people in the population probably contribute to this higher incidence. The fact that our series represented only 9% of all the cases treated at the University of Arkansas Medical Center lead us to believe that we are still failing to detect some masked cases.

Cardiovascular complications are the most frequently encountered presenting problems in apathetic hyperthyroidism, and these patients are often referred to as thyrocardiacs²¹. Auricular fibrillation is one of the most characteristic manifestations of masked hyperthyroidism, and its incidence increases with advancing age. It occurs in up to 55% of these patients who are over seventy years old²⁴. The great majority of elderly thyrotoxic patients present some evidence of heart disease, and one should be alert to the possibility of masked hyperthyroidism when confronted with an older person with heart disease. Obviously, thyrotoxicosis may be superim-

posed upon any other type of heart disease, and one should not dismiss this condition from mind simply because other causes of heart disease are found. This fact is particularly important since all the cardiac changes due to hyperthyroidism are reversible^{4, 15, 23}. Thyrotoxicosis does not produce degenerative myocardial changes, but it simply adds to the heart's work¹. Under this increased load, auricular fibrillation occurs, and if the cardiac reserve is exceeded, failure results. Hypertension is frequently associated with hyperthyroidism, but whether this is secondary to thyroid overactivity is doubtful. Both are probably due to a more basic underlying or predisposing condition⁶.

Weight loss is a consistent feature of apathetic hyperthyroidism^{18, 20, 27}, but in occasional cases the loss of tissue may not be apparent due to the concomitant accumulation of edema fluid associated with progressive congestive heart failure.

The diagnosis of masked thyrotoxicosis is facilitated by a high index of suspicion based on clinical findings, and it is best confirmed by protein bound iodine level or by the uptake of radioactive iodine^{3, 20, 21}. The BMR is also a useful aid and if one recognizes the fact that a slight to moderate elevation is more significant in an elderly patient than the same increase would be in a young individual, it is particularly helpful^{9, 16}.

Before the advent of antithyroid drugs, subtotal thyroidectomy was the only successful definitive treatment, but it was attended by considerable danger. The risk was greater than the clinical estimation of the degree of toxicity would lead one to predict, and it was for this reason that Lahey^{20, 21, 22} so strongly advocated the two stage thyroidectomy. Since 1943, however, it has been possible to reduce the risk greatly by first controlling the toxicity with antithyroid drugs. It is now considered relatively safe to do a one stage subtotal excision of both lobes after control has been achieved. Bartels emphasizes the need for controlling the toxicity of thyrocardiac patients as quickly as possible and points out that in some adenomatous goiters massive doses of propylthiouracil are required^{2, 3}. Lugol's solution for two weeks immediately preoperatively is of great help

<u>Features</u>	<u>Young Patients</u>	<u>Patients Over 60 Years of Age</u>
Nervous system	Overstimulation	Exhaustion or apathy
Eye	Usually exophthalmus	Rarely any eye changes
Thyroid gland	Usually diffuse goiter	Usually adenomatous goiter
Heart	Usually tachycardia and palpitation only	Frequently auricular fibrillation, congestive heart failure or angina
Clinical diagnosis	Usually obvious	Usually obscure
BMR	Often unreliable	Usually reliable
Reaction to stress	Marked increase in pulse, temperature, and activation, but few complications	Increased apathy and coma with many complications
Mortality rate	Low	High
Treatment of choice	Subtotal thyroidectomy after control of toxicity	Medical therapy in 50%; Subtotal thyroidectomy after careful preparation in selected cases
Preoperative medication	Heavy sedation needed	Sedation dangerous; little or none needed
Anesthesia	Basal plus general	Local

Figure 3

This table summarizes the main contrasting features of thyrotoxicosis in young and elderly people. (Modified from Crile.)

in reducing the vascularity of the gland and facilitating surgery.

In this group of patients, meticulous attention to pre and post-operative care is of utmost importance. Those with congestive heart failure or auricular fibrillation should be digitalized. In contrast to patients with activating hyperthyroidism,

those with the apathetic variety tolerate sedation poorly. Instead of developing a crisis, they become less responsive and sink into a coma and eventually death. For this reason very light preoperative sedation and local anesthesia are ideal for these patients^{20, 21, 22}.

Radioactive iodine is proving useful in the treatment of hyperthyroidism, and elderly patients with diffuse toxic goiter should be ideal candidates for this form of therapy. When there is a great operative risk, even nodular toxic goiters may be

advantageously treated in this way^{10,11}, but in general the adenomatous glands respond poorly to I₁₃₁ and should be removed when practicable.

In most surgical circles in the past, the prime indication for removal of non-toxic nodular goiters, aside from cosmetic considerations, has been the prevention of malignant change within solitary thyroid nodules. Some surgeons, e.g. Dr. Alton Oschner, have extended this indication to multinodular goiters. It appears from this study that a more prevalent and equally deadly complication of unremoved goiters is the insidious onset of hyperthyroidism with its complications in an older patient. Hence, we have another indication for "prophylactic" thyroidectomy in this group of patients.

SUMMARY AND CONCLUSIONS

1. Hyperthyroidism usually behaves differently in older people than in young individuals. The table in figure three, modified from Crile⁹, seems best to summarize the differences.

2. In aged patients thyrotoxicosis is usually masked by symptoms referable to the cardiovascular, gastrointestinal, or musculoskeletal systems.

3. The majority of these patients have nodular goiters, and many of them are non-toxic for years before becoming overactive.

4. This condition is increasing in frequency.

5. Thyrotoxicosis may occur in the absence of a palpable thyroid gland.

6. We are probably still failing to recognize some cases of masked hyperthyroidism, especially in the early stages.

7. Correct diagnosis is especially important because definite therapy can correct the thyrotoxicosis and result in the reversal of potentially fatal complications.

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◆ What's NEW ◆

Gynecology

DEANE D. WALLACE, M.D.*

The high cost and questionable effectiveness of oral progestational agents used in the past are too well known to us all. Newer agents were disappointing from the onset due to side reactions causing poor patient acceptance even in those women who could afford to fill the prescriptions. Reports of pseudohermaphroditism in newborn female infants born to mothers receiving prolonged therapy with certain of these agents have been most disconcerting.

Recently I have had an opportunity to evaluate an orally active progestin which manifests surprisingly high potency and very good patient acceptance. The Upjohn Company presents this medroxyprogesterone acetate under the trade name, "Provera".

My experience with this new agent has been in combination with a mild tranquilizer and a diuretic in the treatment of premenstrual tension. "Cytran" is the Upjohn Company name for this particular combination tablet. Twenty patients were selected for treatment because of severe premenstrual symptoms usually consisting of the following: edema, irritability, bloating, crying spells, headache, mastalgia, cramping, weight gain and insomnia. One or two tablets daily from mid-cycle to three days before expected menstruation produced gratifying relief in seventeen of the twenty patients.

Infertility due to failure of ovulation is generally considered a hopeless situation. If the general measures of correcting weight defects, giving thyroid and vitamins, and correcting any co-existing physical disorder were to no avail, little else could be done. Kupperman, et al, used 20 mgm of conjugated estrogens (equine) in

a single mid-cycle intravenous injection to stimulate ovulation with encouraging results. One instructs the patient to have sexual contact the day of the injection. Spontaneous ovulation may well occur the cycle following the injection as well. This therapy, to my knowledge, has produced pregnancy in three patients with a mean infertility duration of seven years.

The fertility promoting and inhibiting effects of the new steroids may not be of particular interest to you. I imagine, however, that a flood of telephone calls has convinced you that the lay press has aroused intense interest in your patients. Questionable results and unfavorable side reactions should make the physician approach the problem with guarded enthusiasm.

A new approach to positive and negative family planning without moral scruples has been explored by Doyle, et al. "Fertility Testor Tape" is now available from the Fertility Testor Company of Ottawa, Illinois. This tape does not have the disadvantage of previously employed testing agents and has many advantages over the basal temperature charts. Basal temperature reactions may miss actual ovulation by as much as four days. The tape method gives a "blue" reaction only with actual rupture of the follicle. Double ovulations can be detected with this method. A special plastic syringe-like instrument permits application of the testing paper to the cervical os without danger of contact with glucose of vaginal origin.

There are numerous new agents but nothing spectacular in the treatment of those difficult recurrent cases of trichomonas vaginalis and thrush vaginitis. We, and our harassed patients, are still hoping for an effective pill!

*Donaghey Bldg., Little Rock, Arkansas



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sustains
retains*

*extra
antibiotic
activity*

DEC

attains activity
levels promptly

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sustains activity
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DECLOMYCIN Demethylchlortetracycline sustains, through the entire therapeutic course, the high activity levels needed to control the primary infection and to check secondary infection at the original—or at another—site. This combined action is usually sustained without the pronounced hour-to-hour, dose-to-dose, peak-and-valley fluctuations which characterize other tetracyclines.

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DECLOMYCIN Demethylchlortetracycline retains activity levels up to 48 hours after the last dose is given. At least a full, extra day of positive action may thus be confidently expected. The average, daily adult dosage for the average infection—1 capsule q.i.d.—is the same as with other tetracyclines...but **total** dosage is lower and duration of action is longer.



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PROTECTION AGAINST RECURRENCE

CAPSULES, 150 mg., bottles of 16 and 100. **Dosage:** Average infections—1 capsule four times daily. Severe infections—Initial dose of 2 capsules, then 1 capsule every six hours.

PEDIATRIC DROPS, 60 mg./cc. in 10 cc. bottle with calibrated, plastic dropper. **Dosage:** 1 to 2 drops (3 to 6 mg.) per pound body weight per day—divided into 4 doses.

SYRUP, 75 mg./5 cc. teaspoonful (cherry-flavored), bottles of 2 and 16 fl. oz. **Dosage:** 3 to 6 mg. per pound body weight per day—divided into 4 doses.

PRECAUTIONS—As with other antibiotics, DECLOMYCIN may occasionally give rise to glossitis, stomatitis, proctitis, nausea, diarrhea, vaginitis or dermatitis. A photodynamic reaction to sunlight has been observed in a few patients on DECLOMYCIN. Although reversible by discontinuing therapy, patients should avoid exposure to intense sunlight. If adverse reaction or idiosyncrasy occurs, discontinue medication.

Overgrowth of nonsusceptible organisms is a possibility with DECLOMYCIN, as with other antibiotics. The patient should be kept under constant observation.



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**A TEACHING SEMINAR
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Cryptococcal Meningitis

BURCH V. RALEY, M.D.*

A REPORT OF 3 CASES

Human infections with the organism known as *Cryptococcus neoformans* have been recognized since late in the nineteenth century. Cryptococcosis was formerly considered a quite rare disease, but during recent years increased interest in these infections and their treatment has revealed that the incidence is much higher than previously known. By 1955, some 300 cases had been recorded in medical literature, and since that time numerous additional cases have been reported. The organism is world wide in distribution and resides in the soil as a saprophyte. Pigeon excreta is a well known dangerous source of this yeast-like organism. Inhalation is the usual route of inoculation and produces pulmonary cryptococcosis which is usually a self limited disease having no particularly distinguishing features. It may mimic many of the common pulmonary infections or new growths. The dissemination of the organism is by way of the blood stream, and there is a well known predilection for the central nervous system. In the central nervous system there occur meningitis, meningoencephalitis, or more localized pathological lesions or granulomas. Central nervous system dissemination is especially likely to occur in those persons suffering from a preexisting debilitating disease such as leukemia, tuberculosis, sarcoidosis, malignant lymphoma or carcinoma. Involvement of the central service system in cryptococcosis may clinically resemble tuberculous meningitis if the infection is diffuse, and cases of localized cryptococcal granuloma may imitate brain tumor, abscess, subdural hematoma, or other localized brain lesions.

The presentation of the clinical features of 3 cases of cryptococcal meningitis diagnosed and treated at the Little Rock Di-

vision of the Veterans Administration Consolidated Hospital during the last several years is presented below.

Case No. 1: A 31 year old white male mechanic was admitted to the Little Rock VA Hospital on 4/20/57, complaining of headache and general malaise. His illness started in mid February in 1957, at which time he developed a post nasal drip accompanied by a cough productive of small amounts of sputum. Subsequently he developed occipital headache which continued to increase in severity and involve the frontal area. These symptoms continued to progress and in late March the patient had the onset of vomiting. He was hospitalized in his home town where spinal fluid studies revealed the presence of abnormal cells and a tentative diagnosis of brain tumor was made. He was referred to a neurosurgeon at a Little Rock hospital where spinal fluid examination revealed the presence of *Cryptococcus neoformans* demonstrated by India ink preparation. He was immediately transferred to this hospital.

Physical examination: Temperature 98.6° F. Blood pressure 160/110. There was moderate but definite nuchal rigidity. The optic discs bilaterally revealed evidence of early papilloedema. The Kernig's test was positive. No tremor or nystagmus was present. Physical examination was not otherwise remarkable.

Laboratory data: Initial hemogram was normal in all respects. Initial urinalysis was normal except for 1+ proteinuria. Spinal fluid examination four days prior to admission to this hospital revealed cloudy fluid containing 180 cells/cmm, 98% being lymphocytes. Total protein was 61 mg. %, sugar 45 mg. %. *Cryptococcus neoformans* was found in this spinal fluid, and also in spinal fluid examined on his

*Veterans Administration Consolidated Hospital, Little Rock, Arkansas.

second hospital day in this institution. Subsequent spinal fluid examinations continued to show a lymphocytic pleocytosis ranging from 80 to 200 cells/cmm, while the total protein remained elevated, reaching 104 mg.% at one time. Subsequent cultures and India ink preparations on spinal fluid were all negative for *Cryptococcus neoformans* except for an occasional organism seen on 6/17/57. On 7/2/57, at the completion of Amphotericin therapy the spinal fluid revealed 49 lymphocytes/cmm and the protein had dropped to 60 mg.%. The most recent spinal fluid examination on this patient performed on 8/28/59 revealed the presence of 3 lymphocytes/cmm and a total protein of 27 mg.%; culture for cryptococcus was negative. Other laboratory results on this patient were not particularly significant. There was a transient rise in blood NPN during the course of therapy, but the top level reached was 61 mg.%; subsequently, this value returned to normal levels. X-rays of the chest and gastro-intestinal tract were within normal limits.

Clinical course: Following admission this patient continued to suffer from rather severe recurrent headache and had rather frequent nausea and vomiting. On the third hospital day treatment was started with Amphotericin B which was being used investigatively at that time. An initial dose of 25 mg. was given intravenously and the drug was continued each day in increasing dosage to a level of 100 mg. daily. Subsequently, Amphotericin B was administered at the rate of at least 50 mg. daily until the 73rd hospital day at which time it was discontinued. On the 32nd, 35th, and 40th hospital days 0.5 mg. of Amphotericin B was administered intrathecally. In spite of moderately severe reactions consisting of headache and nausea and vomiting, this patient was considered to have tolerated the medication fairly well, and there was progressive improvement. Total dose of Amphotericin B was 3233 mgm. during a sixty-nine day period. On the 83rd hospital day the patient was allowed to go home. Subsequently, the patient has been seen on repeated occasions at which time he has been found to be asymptomatic and able to follow his occupation as an automobile mechanic. There has been no recurrence

of headache or other symptomatology. Follow up is being continued.

Case No. 2: This patient, a 33 year old colored male, was admitted to the hospital on March 31, 1958, in a mentally confused state and complaining of severe headache. History as obtained from relatives revealed that the patient had started to complain of headache over his right eye some 6 weeks or more prior to admission. This progressed in severity, and the patient was obliged to quit his laboring occupation and go to bed. Along with the increasing severity of headaches, the patient began to become mentally confused and irrational. There was a history that the patient frequently indulged in alcohol, but had discontinued this 4 weeks prior to admission because it apparently made the headache worse. During the 3 or 4 weeks prior to admission, the patient frequently became quite angry with his relatives, and on one occasion 3 weeks prior to admission had fallen to the floor with a convulsion which had all the characteristics of a grand mal seizure. The patient's past history was essentially negative, and he had always remained in excellent health.

Physical findings: The patient was well nourished, well developed, and at the time of admission complained only of severe headache. Shortly after admission he became confused and lethargic. Moderate nuchal rigidity was noted. A 6th cranial nerve paralysis was present on the right side, but there was no other neurological abnormality. The remainder of the physical examination was within normal limits. Psychiatric evaluation at that time revealed that the patient was hallucinating in both auditory and visual spheres.

Laboratory data: The white blood count at the time of admission was 12,000 with 92% neutrophils. Hemoglobin was 13.7 grams. VDRL was non-reactive. Urinalysis revealed 1+ proteinuria and 3-4 WBC/HPF. Spinal fluid examination on 4/3/58 revealed a turbid appearing fluid containing 900 cells per cu. mm. with a differential count of 88% lymphocytes and 98 mg.% protein. India ink preparation was positive for *Cryptococcus neoformans*, and this spinal fluid subsequently was positive on culture for this organism. Spinal fluid examination on 5/21/58 revealed essentially clear fluid with a pressure of 380 mm.

of water; the total cell count was 253/cmm with 243 lymphocytes, while the protein was 178 mg.%. India ink preparation was negative. Subsequent spinal fluid studies continued to reveal elevated pressures, elevated cell count usually running over 200 cells/cmm with lymphocytes predominating, and elevated protein reaching a level of 265 mg.% at its highest point on 8/22/58. Subsequent India ink preparations and cultures for *Cryptococcus neoformans* were all negative. The most recent spinal fluid examination performed on 7/7/60, revealed pressure of 170 mm. of water, cell count of 4 lymphocytes, protein of 34 mg.%, and sugar of 78 mg.%. India ink preparation and culture for *C. neoformans* were negative. Repeated blood NPN determinations throughout his hospitalization remained within normal limits. Urinalysis revealed only occasional 1+ proteinuria and small numbers of white blood cells. Moderate anemia developed during the course of treatment, hemoglobin reaching 9.8 gm. per 100 cc. This subsequently rose to normal levels. X-rays of the chest and skull remained normal. Electroencephalograms performed on 3 occasions revealed abnormalities but no evidence of focal lesions.

Course in Hospital: Shortly after admission this patient's psychotic behavior became much worse, being characterized by confusion, irritability, ataxia, and failing vision. On 4/8/58, treatment with Amphotericin B intravenously was instituted. Dosage of 15 mg. per day was attempted during the first few days of treatment and much difficulty was encountered because of lack of cooperation from the patient and some trouble in tolerating the drug. Subsequently, however, the dosage was gradually increased and reached levels of 50 mg. per day. Amphotericin B was administered usually on every second day, and the patient frequently had to be restrained for this procedure because of mental confusion. The patient tolerated this therapy rather well in some respects in that he had only occasional low grade temperature elevation and mild chill, while nausea and vomiting was not troublesome. The patient continued to complain rather severely of headache, but by 5/7/58, he had become much more rational and oriented. He complained progressively of failing vision, and by

6/18/58, his vision was almost nil. Papilloedema had become obvious and this was confirmed by frequent consultations with an Ophthalmologist. Treatment with Amphotericin B was continued until 7/1/58, at which time it was discontinued after a total dosage of 2.74 grams. At that time the patient was totally asymptomatic except for impaired vision. The patient was allowed to leave the hospital on 9/12/58, and subsequently, has been seen on frequent occasions. At the time of his last examination on 7/7/60, he had no complaints except for poor vision and evidence of the bilateral optic atrophy secondary to papilloedema remained present. This visual impairment is considered of permanent nature by the Ophthalmologist. The patient had no complaints of headache and was working part-time at manual labor. It is interesting to note that although this patient's cerebral spinal fluid became negative for cryptococcus organisms shortly after Amphotericin therapy was started, the cerebral spinal fluid cell count and protein levels remained abnormally elevated until 7/7/60, twenty-four months after therapy was discontinued.

Case No. 3: A 36 year old colored male carpenter was admitted to the hospital on 3/8/60, complaining of dizziness, nausea and vomiting of about 6 weeks duration. He had become ill in about mid January 1960, with a headache, cough and a sensation of being cold. These symptoms did not respond to ordinary home remedies and when they persisted, he consulted several different doctors over a period of several weeks with no lasting relief. During the 2 weeks prior to admission his headache had become worse, and he had developed generalized weakness.

On physical examination the patient was well developed and well nourished, well oriented but somewhat lethargic. The optic nerve heads were slightly indistinct. All deep tendon reflexes were hyperactive and there were bilateral positive Babinski and Hoffman reflexes. There were no demonstrable sensory abnormalities.

Laboratory data: Initial spinal fluid studies on 3/18/60, revealed a pressure of 300 mm. of cerebral spinal fluid and a cell count of 264 lymphocytes/cmm. Sugar was

20 mg.% and protein 330 mg.%. India ink preparations for *Cryptococcus neoformans* were negative. Subsequent spinal fluid studies continued to reveal elevated pressures and the cell count remained elevated, consisting entirely of lymphocytes. Spinal fluid protein also remained elevated and on 4/6/60, this value was 1,050 mg.%. Repeated India ink preparations on spinal fluid specimens remained negative. On 4/25/60, spinal fluid specimens which had been drawn on 3/31/60 and 4/1/60, respectively, were reported as positive on culture for *Cryptococcus neoformans*. Other laboratory data was of no particular significance except for x-ray evidence of a soft tissue density 1.5 cm. in diameter in the left lower lung lobe. This lesion was first described on a chest film taken on 3/8/60; a report of a chest x-ray taken on 3/30/60, indicated that this abnormal density had subsided, and the chest x-ray was negative. Skull x-rays made on 4/20/60, showed marked thinning of the dorsum sella and posterior clinoids consistent with increased intracranial pressure.

Course in Hospital: At the time of admission this patient was thought to be suffering from some type of viral encephalitis. Other etiologies were of course considered including the possibility of tuberculous meningitis as well as meningitis due to cryptococci or other fungi. Since repeated India ink preparations were negative and the patient grew worse progressively, it was assumed that he had tuberculous meningitis and therapy for this was started. In spite of treatment with isoniazid and streptomycin, the patient continued to have a low grade fever and lethargy progressed. In addition to the antituberculous medication, the patient was treated with Triamcinolone and subsequently received cortisone intramuscularly. The patient progressively failed and lapsed into coma. On 4/25/60, a report of positive culture for *Cryptococcus neoformans* from the spinal fluid was obtained. The anti-tuberculous medication was discontinued. Treatment with Amphotericin B was started on 4/25/60, the patient receiving 25 mg. of this agent intravenously. On the following day 35 mg. of Amphotericin B was administered, but the patient continued to deteriorate, remained comatose, and

developed flaccid paralysis of the left arm. He failed to respond to further measures of supportive therapy, and expired on 4/27/60.

DISCUSSION

These three case histories are representative of some of the varied clinical manifestations following diffuse involvement of the central nervous system by *Cryptococcus*. The possibility of infection by *C. neoformans* should be considered in all individuals suffering signs of meningitis and showing spinal fluid findings of increased pressure, elevated cell count, lymphocytic in type, elevated cerebral spinal fluid protein, decreased sugar and chlorides. This organism should be particularly suspected in victims of chronic debilitating diseases, such as leukemia, lymphoma, or malignancy, presenting signs of meningeal involvement. Tuberculous meningitis is frequently a problem in differential diagnosis. All patients suspected of having meningitis of tuberculous etiology should also be thoroughly studied for the presence of *C. neoformans*. This is particularly true of those cases who do not present obvious pulmonary tuberculosis or other tubercular foci. Repeated India ink preparations and cultures of spinal fluid should be performed in these patients, as one or more negative India ink preparations or cultures of spinal fluid do not exclude the possibility of cryptococcal meningitis. Those cases characterized by localized pathological lesions of the central nervous system are usually diagnosed after the lesion has been removed by neuro-surgical procedures and the organism has been identified by culture or found in tissue sections. At present, tests for agglutinins or other circulating antibodies and skin hypersensitivity are not sufficiently advanced for routine diagnostic use in man.

Cryptococcal meningitis was an almost invariably fatal disease prior to the event of Amphotericin B.

Innumerable therapeutic agents have been used for many years in treatment of this disease, and evaluation of these have been difficult due to periods of remission which characterize some cases of cryptococcal meningitis. The most common course of cryptococcal meningitis is one of progressive deterioration until death supervenes; however, some cases are character-

ized by great chronicity and tendency to spontaneous remission. This fact demands caution in accepting reports of a "cure" in patients with cryptococcal meningitis. Recent literature includes many reports of encouraging results with the use of Amphotericin B in treatment of cryptococcosis as well as various other fungus diseases. A detailed discussion of the pharmacological aspects of Amphotericin B and the features of its clinical use will not be presented here since numerous reports in the literature have included complete descriptions of the agent and its use.

Case No. 1 represents an instance of very satisfactory results following the administration of Amphotericin B. The patient tolerated the drug quite well, and at the time of the most recent follow up examination 25 months after completion of Amphotericin B therapy, has apparently made a complete recovery. Prolonged observation of this patient will, of course, be necessary, considering the possibilities of recurrence.

The second patient also has apparently made a complete recovery from cryptococcosis although unfortunately he has the permanent residual manifested by optic atrophy and almost total blindness. This patient also tolerated Amphotericin B therapy rather well, although during the initial stages of administration of this agent there was considerable difficulty with nausea, vomiting and chills. Subsequently he tolerated average doses of the agent, and at the time of his most recent follow up examination, 24 months after termination of therapy, the patient was totally asymptomatic except for his visual impairment which obviously is of a permanent nature.

The outcome in the third case was especially disappointing in view of the fact that cryptococcosis of the central nervous system was strongly suspected from the time of the patient's admission and repeated search for the presence of *C. neoformans* in the spinal fluid was made without results. The report of positive spinal fluid culture for *C. neoformans* was received just 48 hours prior to the patient's death and instigation of Amphotericin B therapy was of no avail as the disease process had become markedly advanced. This case emphasizes

the necessity for diligent search for cryptococci in these patients. It is of interest that autopsy on this patient revealed diffuse involvement of the meninges with cryptococcosis.

However, cerebral spinal fluid withdrawn at autopsy from the cisterna magna was negative for *C. neoformans* of India ink preparation. The lesion in the left lower lobe removed at the time of autopsy revealed the presence of numerous *C. neoformans* on tissue section. Since this patient was initially thought to be suffering from tuberculous meningitis, adrenal corticosteroids were administered. The use of these agents probably had a deleterious effect on the course of the disease since several reports have appeared in the medical literature indicating that the use of adrenal corticosteroids accelerates the course and progression of the disease, at least in animal studies.

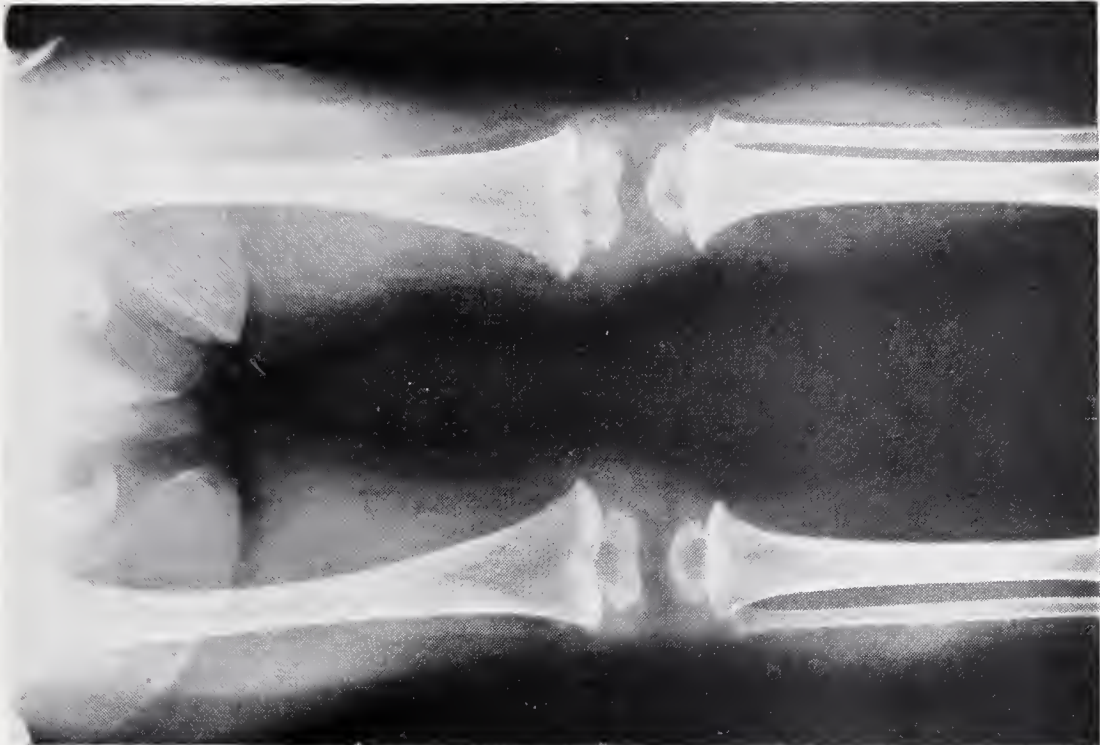
SUMMARY

Three cases of Cryptococcal meningitis are presented emphasizing the clinical features regarding diagnosis and treatment.

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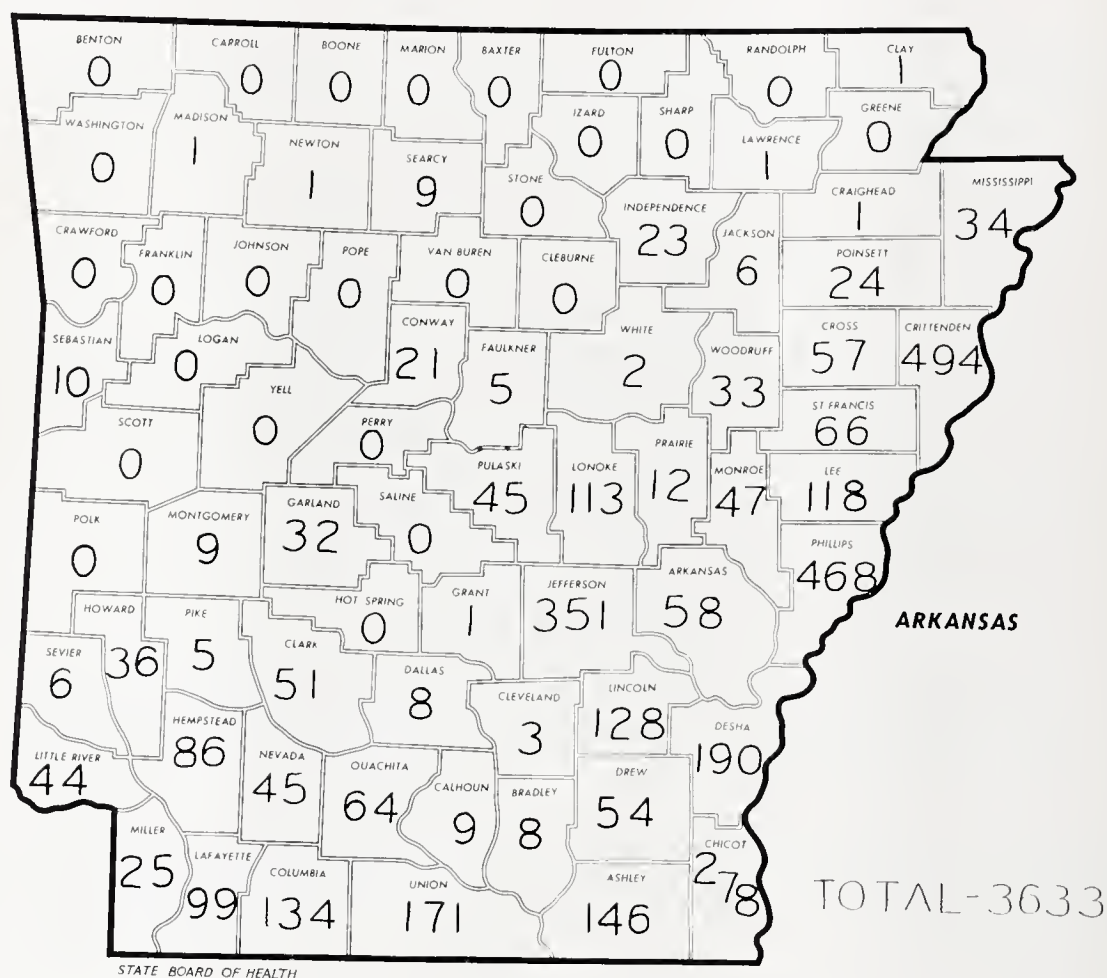
What Is Your Diagnosis?



FOR ANSWER SEE PAGE 220

Arkansas Public Health at a Glance

MIDWIFE DELIVERIES 1959



A sharp reduction in the number of births attended by midwives in the past ten years is an indication of the progress of public health in Arkansas. There were 1024 midwives in Arkansas in 1949 and they reported a total of 7606 births. In 1959, there were only 326 midwives reporting a total of 3,633 births.

Eight years ago the Arkansas State Board of Health established standards for obtaining permits to practice midwifery in this state, and practice is forbidden without a permit. Monthly classes are held by public health nurses in all counties with midwives in an effort to further improve the service rendered by those with permits.

Corresponding to the decrease in the number of births attended by a midwife has been a rise in the number of births

which occur in a hospital. Over the past ten year period the percentage of births which occur in a hospital has risen from approximately sixty percent of the total births to eighty-five percent. The percentage of births without the service of a physician has decreased from fifteen percent of the total to just slightly over nine percent.

There are twenty-five counties in Arkansas that did not have a single birth attended by a midwife last year. Eighteen others had less than ten. However, on the other side of the picture there were four counties with over 200 births reported by midwives. These are located in the eastern section of the state and all four counties have a large non-white population. Seven other counties in eastern and southern sections reported between 100 and 200 midwife deliveries.

Newer Work on the Malabsorption States

ALFRED KAHN, JR., M.D.

Dietary deficiencies may appear from a variety of causes. The most obvious is a failure of the patient to eat a balanced, correct selection of foodstuffs. Even if the patient is presented with a balanced diet, deficiencies may show; for example, he may not be able to absorb the food. Lastly, even though the food is absorbed the body may not be able to metabolize it properly as is the case of carbohydrate in diabetes mellitus.

A good example of the second category is sprue, a disease characterized by malabsorption of food. Aside from pernicious anemia which in a sense is a malabsorption of cyanocobalamin, very little progress was made in the field of small intestinal absorption until the advent of two new tools: radioactive isotopes and small intestinal peroral biopsy instruments. Both techniques are ingenious and offer great promise as investigative tools.

Duffy and Turner (*Ann. Int. Med.*, Vol. 48, p. 1, Jan. 1958) have used radioactive iodine in the differential diagnosis of the intestinal malabsorption syndromes. They used triolein as a neutral fat and oleic acid as a representative fatty acid; both were labelled with radioactive iodine. The labelled fats were administered as a meal. In cases of pancreatic insufficiency where there was no enzyme like lipase to split neutral fat, the triolein was almost unabsorbed, but the oleic acid was absorbed well. In chronic pancreatitis there is a flat triolein absorption curve and impaired oleic acid absorption. The authors found that in regional ileitis the amount of total fats absorbed was diminished but the proportion of absorbed neutral fat to fatty acid was normal. The same was true in sprue, small bowel resections and gastric resection. The main point demonstrated here is that in pancreatic insufficiency neutral fat is almost unabsorbed with good fatty acid absorption in contrast to the other states

where there is a decrease in total absorption, but the relationship of neutral to fatty acid is normal.

Labelled Vitamin B-12 (cobalt 58 or 60) has been used by Oxenhorn, Estren, Wassermans and Aldersberg to study the malabsorption syndrome. They found that Vitamin B-12 is poorly absorbed regardless of whether it is given alone or with intrinsic factor or with antibiotics. They used this test as a means of differentiating the megaloblastic anemia of sprue from pernicious anemia. In pernicious anemia, although Vitamin B-12 alone is not absorbed, if intrinsic factor is added the absorption of B-12 is considerably improved. Here, then, is another chemical evidence of a failure of the mucosa of the intestine to absorb an essential food stuff in the malabsorption syndrome.

In this era of enthusiasm for chemical and physiological research, it is well to remember that significant contributions are still being made in older fields of medical science as pathology. The pathological study of the lining mucosa of the gastrointestinal canal has been difficult to study because it has been relatively inaccessible during life unless surgery was needed, and after death autolysis sets in very rapidly. There has been a renewed interest in the mucosa of the intestine in sprue. Butterworth and Perez — Santiago, examined a small group of biopsies obtained at laparotomy; they found the villi in the jejunum were edematous, inflamed and widened. They felt that one of the basic causes of sprue might be poor regeneration of the epithelium (*Ann. Int. Med.* 48, p. 8, 1958).

The coupling of two new instruments into a research program has further advanced the knowledge of the pathology of sprue. The peroral small intestinal biopsy is an ingenious capsule on the end of a long tube which is passed through the mouth into the small intestine; by appropriate manipulation a piece of mucosa of the

jejunum can be excised and quickly fixed in preservative. In short, no surgery is needed to obtain the biopsy. Hartman and associates used this instrument to obtain biopsies in sprue and then investigated the biopsies with an electron microscope, which gives magnification of many times more than an optical microscope. These authors pointed out that the thickened villi in sprue cut the small bowel absorptive area to about 25% ; they were still puzzled because if decrease in absorption area caused the malabsorption of sprue, why did not extensive

small bowel resections produce sprue. Hartman, *et al.*, postulated then that in sprue each surface cell's micro-villi might be deficient in size and number. Pictures taken with the electron microscope proved this latter contention. Unquestionably, loss of functional surface in the small intestine must be important in some of the malabsorption states.

Better understanding of the patho-physiology of the malabsorption states will lead to better therapy in these and related conditions.

The Doctor as Citizen—"Basics" of Citizenship

We put the first question on how the individual doctor can maximize his influence in political affairs to our Field Service Division, which serves as the liaison between medical societies and the AMA. Here are the seven "basics" of citizenship which are recommended for every physician who takes his civic responsibilities seriously:

—The doctor's primary duty as a citizen is to be the guide and source of authority in all health matters relating to his community. This is an all-year-round civic responsibility, which his training and experience have qualified him to handle better than any other person in the community.

—The doctor should openly identify with the party of his choice, and vote regularly at all elections.

—The doctor should make an investment in democracy by contributing liberally financially to the party of his choice.

—The doctor should encourage patients and others with whom he comes in contact to register and vote in all elections.

—The doctor should keep informed on candidates and issues and let others know

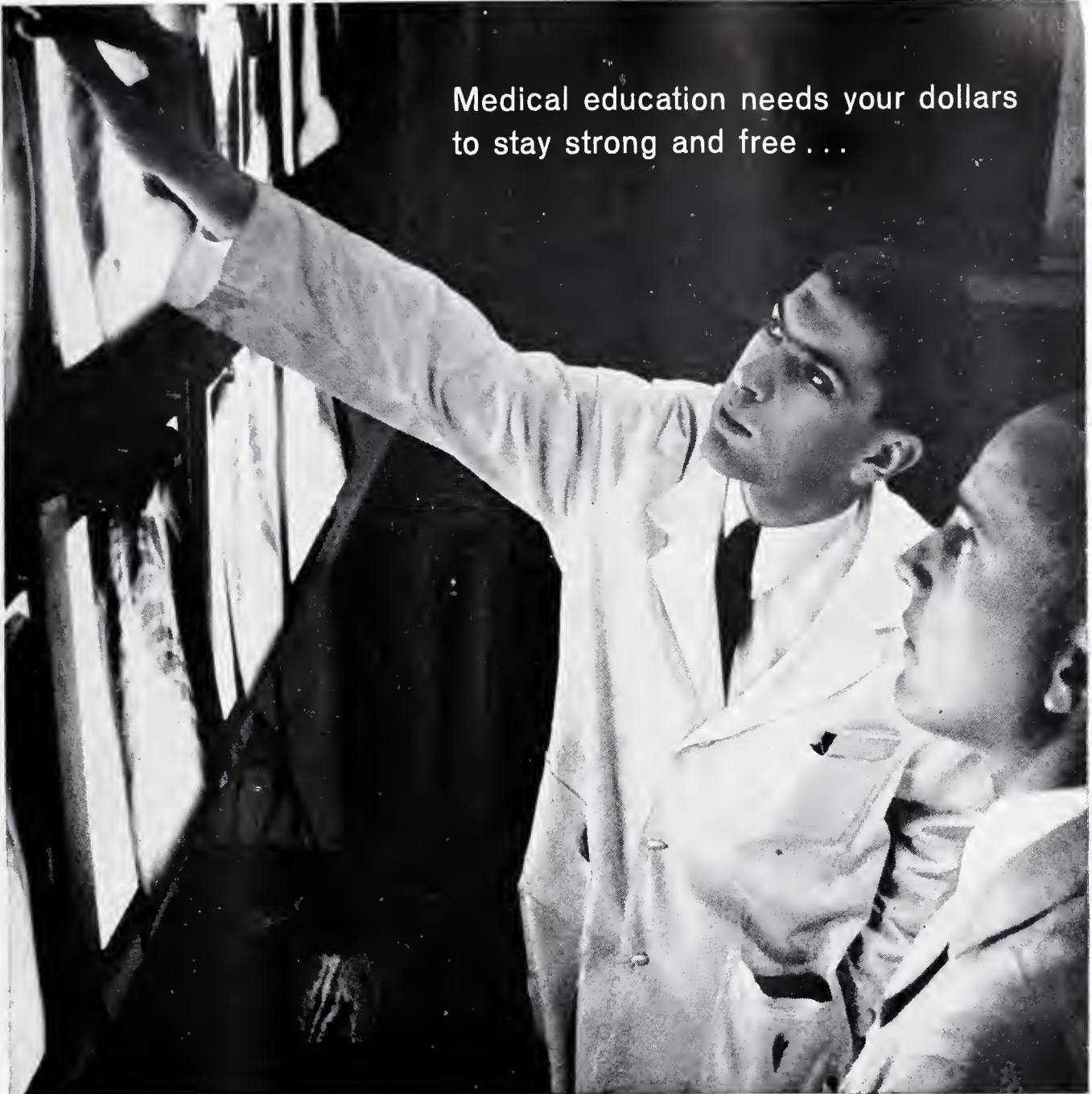
where he stands politically.

—The doctor can help candidates of his choice by such means as displaying campaign literature in his waiting room.

—The doctor should devote as much time as his professional duties permit to working for good government and for the political party of his choice.

What is the medical society's role in the realm of citizenship? As a corporate body the medical society is seriously restricted by federal law from direct political actions in elections, and is prohibited from soliciting or contributing funds to any candidate or party in a federal election. However, a society is free to make its general political beliefs known to the public; to sponsor get-out-the-vote campaigns among its own members and the public; and to inform its members and the public on issues and candidates via such means as "know your candidates" meetings and distributing literature on candidates' voting records and views.

From the Communications Division
American Medical Association



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535 North Dearborn Street
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MEDICINE IN THE NEWS

No Need for Federal Medical Support for Aged

It has contended right along that *there is no real demonstrated need for federal intervention* to provide medical care for the aged. Recently, this position has been given telling and most persuasive support by an independent, national survey of the problem by university sociologists. The results of the survey unquestionably prove that many of the aged prefer financing their own health care without federal intervention. The study disproves the contention of the socialists that most of the aged are sick and in poor financial condition. It shows that most of these citizens are in good health, not sick, and are in moderately good financial condition, not hardship cases.

The study was conducted by James W. Wiggins and Helmut Schoeck, both members of the sociology and anthropology department, Emory University, Atlanta, Georgia. 1,500 noninstitutionalized persons 65 and over were interviewed. The interviews were conducted by 100 trained interviewers supervised by professional sociologists from more than a dozen universities and colleges.

The findings of the survey are:

90% of all responses 65 years of age and over said that they enjoyed good or fair health.

92% said they had no unfilled medical needs and the remaining 8% listed lack of financial resources as one of the least important reasons for their failure to relieve the need.

68% said they could pay for medical emergencies costing from \$1,000 to \$5,000 out of their income, savings or assets.

64% carry medical insurance.

The most common cash income was between \$2,000 and \$3,000 per year. Half of the responses reported incomes of over \$2,000 per year. Most responses reported at least a \$10,000 net worth.

All of them were concerned with the loss of true value of the dollar. The aged expect the government to help those who are truly destitute but qualified with the

expression "if there are no children" to help. In the area of public housing, 43% favored assistance when necessary under church auspices. Less than 25% favored government housing even if the need was dire.

80% are members of some church and voted two to one for aid and assistance when necessary from their church as compared to those who voted for any help from the federal government.

90% have lived in their present communities for ten years or more.

86.5% have at least one son or daughter in same community.

About 25% live with their children and prefer this close family association.

From the Legislative Bulletin of
the Association of American
Physicians and Surgeons

THE MONTH IN WASHINGTON

Democrats and Republicans are campaigning on opposing planks on the issue of health care for the aged. The Democratic party advocates the Social Security approach; the Republican party favors federal aid in the field, but outside the Social Security system.

The GOP plank pledged:

"Development of a health program that will provide the aged needing it, on a sound fiscal basis and through a contributory system, protection against burdensome costs of health care. Such a program should:

"—Provide the beneficiaries with the option of purchasing private health insurance—a vital distinction between our approach and Democratic proposals in that it would encourage commercial carriers and voluntary insurance organizations to continue their efforts to develop sound coverage plans for the senior population.

"—Protect the personal relationship of patient and physician.

"—Include state participation."

The key paragraph of the Democratic plank stated:

"The most practicable way to provide health protection for older people is to use the contributory machinery of the Social Security system for insurance covering hospital bills and other high cost medical services. For those relatively few of our older people who have never been eligible

for Social Security coverage, we shall provide corresponding benefits by appropriations from the general revenue."

Charles H. Percy, Chairman of the GOP Platform Committee, stated that the reference to a "contributory system" in the Republican plank did not mean a Social Security tax.

Presidential and Vice Presidential candidates of both parties went into the election campaigns pledged to support the health-care-for-the-aged planks adopted by their respective conventions. Vice President Richard M. Nixon, the GOP Presidential nominee, already was on record as unalterably opposed to any program of national compulsory health insurance. The long-established position of Sen. John F. Kennedy of Massachusetts, the Democratic Presidential candidate, has been "that only by use of the Social Security system can we have true health insurance."

Speaking for the American Medical Association, Dr. Edward R. Annis of Miami, Fla., appeared before the platform-drafting committee of the Democratic convention at Los Angeles, and Dr. Leonard W. Larson, AMA President-elect, before the Republican policy group at Chicago.

The AMA spokesmen warned both parties that a program following the Social Security approach "would be unpredictably costly; it would unnecessarily cover millions of people; it would substitute service benefits for cash benefits; it would lead to poorer—not better—quality of medical care; it would overcrowd our hospitals; it would lead to the decline, if not the demise, of private health insurance; and it would interfere dangerously with the doctor-patient relationship, which is the solid foundation upon which effective medicine must be based."

Dr. Annis also urged support of the House-approved Mills plan to provide health care for the needy aged who need help with the federal government and the states sharing the costs outside the Social Security mechanism.

In an advertisement run in some large daily newspapers in mid-August, the A. M. A. outlined its reasons for supporting the Mills plan, the ad said, in part:

"The A. M. A. believes our nation, as well as its senior citizens, will best be

served by a locally administered health aid program designed TO HELP THOSE WHO NEED HELP . . .

"... We are equally sincere in our opposition to legislative measures that approach the problem on a shotgun basis—with the idea of increasing repeatedly the Social Security tax in order to finance health benefits for EVERYONE who is covered by the Old Age, Survivors and Disability Insurance program, regardless of their need.

"There are many serious hazards in using the Social Security approach to finance medical and hospital care for our older citizens. When government starts telling the doctor how to practice medicine; telling the nurses how to nurse; telling the hospital how to handle its patients, the quality of medical care is sure to decline. The cost of such a program eventually would be staggering, and would make a serious dent in the pay envelopes of millions of Americans covered by Social Security. Private, voluntary health insurance, which has been doing such a magnificent job, would be undermined and, in time, destroyed.

"Most important, perhaps, is the fact that such an approach would just be the beginning of compulsory, government-run medical care for every man, woman and child in the United States. For it wouldn't be long before the Federal Government would be lowering the age at which people would be eligible, and adding one costly service after another to a program that would place your health care under the Federal Government's thumb.

And let's not forget that our present health care is recognized to be the world's finest."

From the Washington Office of the American Medical Association

* * *

From Association of American Medical Colleges

Geographic Restriction and Medical School Expenditures

Two significant correlates of the learning ability and the level of achievement in undergraduate science areas of a medical school's student body are: (1) the total annual expenditure of the medical school and (2) the proportion of out-of-state students enrolled in the first-year class.

Seventy-four U. S. medical schools were classified into the following six categories on the basis of their total expenditures during 1957-58 and the proportion of non-resident students they admitted to their first-year classes during 1956-57 and 1957-58:

Low-restricted
(7 schools, 555 students)
Expenditures under \$2 million, less than 10% nonresident students.

Low-unrestricted
(12 schools, 951 students)
Expenditures under \$2 million, 10% or more nonresident students.

Middle-restricted
(12 schools, 1,192 students)
Expenditures between \$2 million and \$3.5 million, less than 10% nonresident students.

Middle-unrestricted
(18 schools, 1,796 students)
Expenditures between \$2 million and \$3.5 million, 10% or more nonresident students

High-restricted
(8 schools, 993 students)
Expenditures over \$3.5 million, less than 10% nonresident students.

High-unrestricted
(17 schools, 1,610 students)
Expenditures over \$3.5 million, 10% or more nonresident students.

The following schools were not included in the analyses: Dartmouth, Einstein, Florida, Howard, College of Medical Evangelists, Meharry, North Dakota, Seton Hall,

South Dakota, West Virginia, and Woman's Medical.

Average MCAT scores were computed for the 1957-58 first year class at each of the 74 schools. Figure 1 shows the median and range of these averages on a combined Verbal and Quantitative Ability score for schools in each of the six expenditure-restriction categories. Figure 2 contains similar information for the Science Achievement of the MCAT.

Note that although high expenditure levels and unrestricted enrollment policies are associated with the highest median scores and a considerably higher upper limit than is obtained under any other set of conditions, this combination does not guarantee high-level ability in the student body. The lowest school mean in the high-unrestricted group is considerably lower than its counterpart in the high-restricted group.

Also, neither low expenditures nor geographical restrictions alone prohibits the attraction of intellectually able students, as shown by the high mean scores obtained by some schools in each of these categories. (See the upper ends of the ranges in the low-unrestricted and high-restricted groups).

Low expenditures plus geographic restrictions, however, seem virtually to guarantee that the average intellectual capacity of the student body will be poor to mediocre. Only two of the low-restricted schools had average scores that were at or above the mean obtained by the entire 1957-58 applicant group, and only one of these

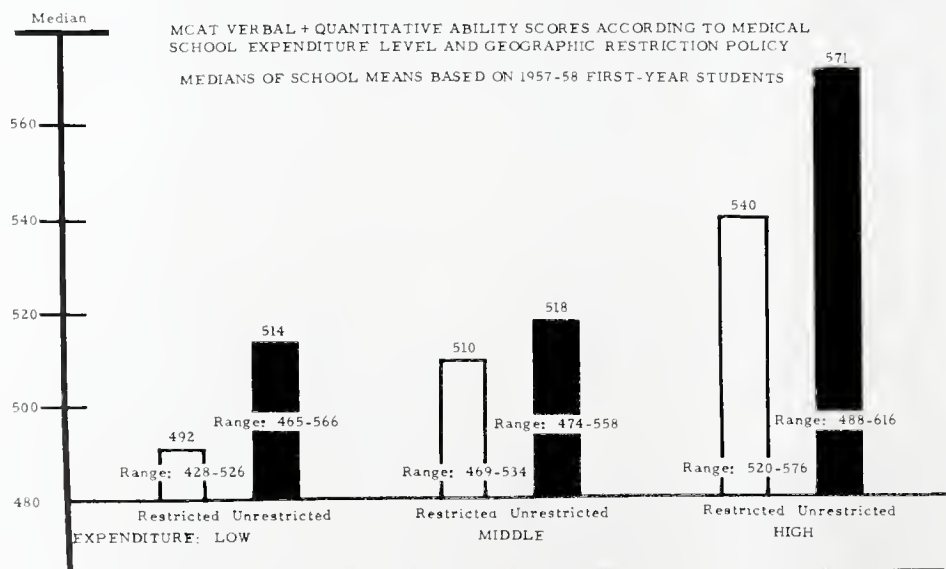


Figure 1

FEATURES

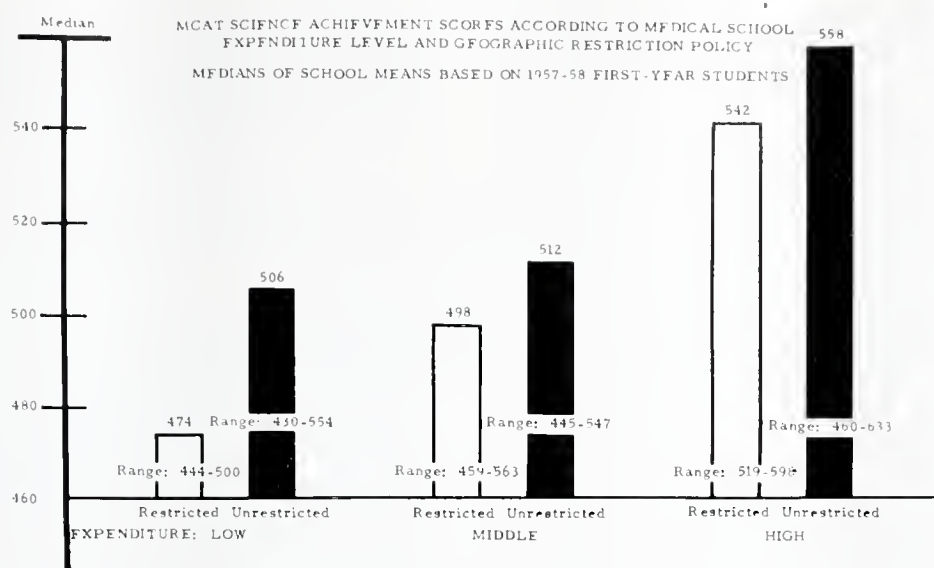


Figure 2

schools scored above the mean of all accepted applicants for that year.

Application Activity for the Academic Year 1959-60

For the third consecutive year the number of individuals applying to U. S. medical schools has decreased. The total number of applicants to the 1959-60 class was 6 per cent less than the total number applying in 1956-57. The total number of applications exhibited a similar decrease, but the overall number of acceptances increased slightly (up 3 per cent over 1956-57), thereby accentuating the significance of the trend.

Table 1 presents the data for this year and for the previous 12 years.

Although undergraduate college enrollments continue to increase, U. S. medical schools have experienced two peaks in application activity since World War II. A recent survey of the 1959 senior class by the AAMC's Division of Operational Studies indicated that at the time Veterans' benefits accounted overall for only about 4 per cent of medical students' income. This information is consistent with the obvious correlation between the number of veterans in training and the degree of applicant activity.

Table 1
SUMMARY OF APPLICATION ACTIVITY DURING THE PAST 13 YEARS

1st Year Class	Applicants	Applications			1st Level Degrees Granted (Men Only)	Students Under G.I. Bill
		TOTAL	Per Individual	Accepted Applicants		
1945-46					58,945	87,805
1946-47					110,500	1,012,400
1947-48	18,829	56,279	3.0	6,512	176,146	1,149,941
1948-49	24,242	81,662	3.4	6,973	264,222	974,945
1949-50	24,434	88,244	3.6	7,150	329,819	843,677
1950-51	22,279	81,931	3.7	7,254	279,343	580,597
1951-52	19,920	70,678	3.5	7,663	227,029	396,186
1952-53	16,763	56,319	3.4	7,778	200,820	266,650
1953-54	14,678	48,586	3.3	7,756	187,500	280,264
1954-55	14,538	47,568	3.3	7,878	183,602	364,645
1955-56	14,937	54,161	3.6	7,969	199,571	450,880
1956-57	15,917	59,798	3.8	8,263	222,738	474,657
1957-58	15,791	60,951	3.9	8,302	242,948	446,348
1958-59	15,170	59,102	3.9	8,366	257,000	380,271
1959-60	14,951	57,890	3.9	8,510		

As the National Defense Education Act of 1958 becomes increasingly implemented, it is conceivable that it will fill the economic void left by the retirement of the G. I. Bill and that a corollary increase in applicant activity will ensue. At least two factors mitigate against this possibility. First, monies available under this act are in the form of loans which may make them less attractive to the student who contemplates extending his academic career than was the outright grant under Veterans' training. This might be especially true if the student has already burdened himself financially during the period of his undergraduate education. Second, these funds are matching funds requiring an outlay on the part of the medical college which in many cases cannot be realistically met in any large amount. The AAMC Teaching Institute report on **The Ecology of The Medical Student** indicated, for example, that 40 per cent of all U. S. medical schools could not, at that time, fulfill their students' needs for educational loans.

Any search for explanatory factors relevant to future predictions of applicant activity should not be limited to immediate past experience. For the most part, the past 20 years represent an unstable base for future projections. We might consider, for example, that for years medicine, law, and the clergy constituted the intellectual community. Now, as Potthoff points out in his recent **J. Med. Educ.** article, "Wider and wider ranges of vocational opportunities in professional, technical, and scientific fields have opened up over the years and will open up in the future to men who possess a baccalaureate degree. As a consequence, decreasing proportions will have an interest in medicine." The 1959-60 "Study of Applicants" now in preparation for the **J. Med. Educ.** will present a more complete discussion of the interrelations of these long and short range trends along with additional relevant data.

Finally, a reduced number of applicants is not serious if, and only if, the *quality* and *variety* of the talent in the *accepted* applicant group is maintained and improved upon. Next month's *Datagram* will explore the relation of applicant quality to the trends discussed above.

ANNOUNCEMENTS

The University of Texas Postgraduate School of Medicine and The University of Texas M. D. Anderson Hospital and Tumor Institute will co-sponsor a Clinical Symposium on Pediatric Oncology in Houston, Texas on November 11 and 12, 1960. The program will include lectures by guest speakers and by members of the M. D. Anderson Hospital staff, as well as case presentations and panel discussions. Important aspects of chemotherapy, surgery and radiotherapy in the management of children with various types of neoplastic disease will be covered. For further information write: Office of the Dean, The University of Texas Postgraduate School of Medicine, 410 Jesse Jones Library Building, Texas Medical Center, Houston 25, Texas.

The Southern Chapter of the American College of Chest Physicians will hold its 17th Annual meeting at the Statler-Hilton Hotel, St. Louis, Missouri, October 30-31, 1960. All physicians are cordially invited to attend. There is no registration fee.

The 9th Annual Cancer Seminar of the Arizona Division, American Cancer Society will be held January 12, 13 and 14, 1960 at the Tidelands Motor Inn, Tucson, Arizona. This meeting is to be devoted to the various aspects of chemotherapy, virology, endocrinology, environmental factors, etc. as they relate to tumor formation or the therapy for tumors. Further information as to faculty and registration may be obtained from Darwin W. Neubauer, M. D., chairman, 37 East Jackson Street, Tucson, Arizona.

The Alumni Association of the University of Arkansas Medical School will hold an "Arkansas Party" Monday night, October 31, at the Sheraton-Jefferson Hotel in St. Louis, which will be during the meeting of the Southern Medical Association. The cocktail hour will be from 6:30 to 7:30 with dinner following. After dinner there will be a film showing the opening of the new University of Arkansas Medical School. A

registration room will be set up for the convenience of Alumni attending, and it is urged that tickets be purchased there on Sunday or Monday, Oct. 30-31.

The Southern Medical Association will meet in St. Louis, Missouri October 30 to November 2.

Two postgraduate courses on diseases of the chest have been announced by Dr. J. Winthrop Peabody, Sr., Washington, D. C., chairman of the Council on Postgraduate Medical Education of the American College of Chest Physicians.

The first of these, the 15th annual course, Clinical Cardiopulmonary Physiology, will be held at the Sheraton Towers Hotel, Chicago, October 24-28, 1960.

The second, the 12th annual course, Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs will take place at the Park Sheraton Hotel, New York City, November 14-18, 1960.

Tuition for each five-day course will be \$100 including round table luncheon discussions. Additional information may be obtained by writing to Executive Director, American College of Chest Physicians.

The American Thoracic Society, medical Section of the National Tuberculosis Association, is soliciting abstracts of papers on all scientific aspects of tuberculosis and nontuberculous respiratory diseases for presentation at its annual meeting in Cincinnati, Ohio, May 22-24, 1961. Abstracts must be in the hands of the program committee not later than January 7, 1961. Rules governing the submission of abstracts may be obtained by writing Leon H. Schmidt, Ph.D., chairman, medical sessions committee, American Thoracic Society, 1790 Broadway, New York 19, N. Y.

Applications for grants for medical and social research in tuberculosis and other respiratory diseases are now being accepted by the National Tuberculosis Association, through its medical section, the American Thoracic Society. December 15, 1960 is the deadline for submission of applications for the grant year July 1, 1961 through June 30, 1962. For further information and application forms, write the Division of

Research & Statistics, American Thoracic Society, 1790 Broadway, New York 19, New York.

The State of Wisconsin has an excellent opportunity open for a Physician to serve as Medical Director of Southern Wisconsin Colony and Training School, a colony for mentally deficient children and adults. The major responsibility of the Medical Director will be primarily administrative and will involve providing strong professional leadership and direction to the medical, nursing and related medical services at the institution. The medical and nursing staff is approximately 40 and the Colony serves about 1,500 children. For further information write to Mr. John Garstecki, Superintendent, Southern Colony and Training School, Union Grove, Wisconsin.

The Oklahoma City Clinical Society will hold its 30th Annual fall conference at the Biltmore Hotel, Oklahoma City, Oklahoma October 24-26, 1960. Dr. Theo. C. Panos, professor and chairman, Department of Pediatrics, University of Arkansas Medical Center, Little Rock, is one of the guest lecturers appearing on the program. Registration fee of \$20, should be sent to the Oklahoma City Clinical Society, 503 Medical Arts Building, Oklahoma City, Oklahoma.

The Arkansas Children's Colony, Conway, Arkansas, will be host to the regional meeting of the American Association on Mental Deficiency November 4 and 5. Kansas, Missouri, Oklahoma, Texas, Louisiana and Arkansas will be represented. Members of the Arkansas Medical Society are cordially invited to attend the sessions.

Obituary

Dr. John F. Smith, aged 58, died July 10 at Paris, Arkansas. He was a member of the Paris Hospital staff for the past 34 years, and a member of the Logan County Medical Society, the Arkansas Medical Society, and the American Medical Association.

Survivors include his widow, Mrs. Ethel Smith, two brothers, Dr. Charles and Dr. James T. Smith of Paris, and one sister, Mrs. W. C. Davis of Paris.

Dr. C. A. Henry, aged 74, a staff physician at the state Tuberculosis Sanatorium, Booneville, died August 2 and was buried from the First Methodist Church of Clarendon, his former home, on August 4, with burial in Shady Grove Cemetery. Dr. Henry had served as county Health Officer for Monroe and Arkansas Counties before going to Booneville, where he served on the State Sanatorium staff for 17 years. He is survived by his wife, Mrs. Lula Fultz Henry, two sons, Norman W. Henry of Bingham City, Utah, and James W. Henry of Clarendon; a daughter, Mrs. Mary Eugenia Boyle of Clarendon, four brothers and four sisters.

Dr. John R. Sloan, Garner, Arkansas died August 14th, 1960. Dr. Sloan was 89 years old and had practiced medicine for 57 years. He received his "50 year pin" several years ago and was a Life member of the Arkansas Medical Society. He was the father of Dr. D. W. Sloan of Beebe, Arkansas.

Robert M. Branch, age 17, son of Dr. and Mrs. J. W. Branch of Hope, Arkansas, died on August 14 from Pneumonia. He was buried in Memory Gardens, Hope, Arkansas.

Answer to What Is Your Diagnosis? BONES-SCURVY

This 8 month old colored female had had a rash for about one month, but at the time of admission the rash was clearing. She had had numerous upper respiratory infections. Examination of the mouth revealed bleeding gums. The patient received large amounts of vitamins and became less irritable and more alert.

Alkaline phosphatase is 12.3 KAU.

Films on March 11, 1958 revealed the bones to show generalized osteoporosis with thinning of the cortex. A dense line of calcification is seen at the epiphyseal plate. No widening of the distance between the epiphysis and metaphysis is seen. No periosteal elevation is present. Films on May 7, 1959 revealed healing with ossification of epiphyses.

PERSONAL AND NEWS ITEMS

Dr. John Saunders of Memphis has moved to Tuckerman to begin the practice of medicine.

The Arkansas Heart Association gave the University of Arkansas Medical Center checks totaling \$9,600 recently, \$6,500 of this amount will be used for research in open-heart surgery, \$2,500 for long-term research in basic cardiology and \$600 for a student research fellowship.

Dr. Thomas G. Johnston of Little Rock was the featured speaker at the July meeting of the Arkansas Academy of General Practice held in the Rufus Garrett Hotel, El Dorado. Dr. Paul J. Bilka, professor of Medicine at the University of Minnesota, also appeared on the program.

Several changes in the staff of the University of Arkansas Medical Center have been announced by Dr. F. Douglas Lawra-son, Medical Center Provost, effective July 1. Six new doctors and instructors will fill vacancies in four separate departments. Dr. Zenas A. McDonald, who is coming here from the University of Maryland, and Dr. Robert C. Holland who has been with the University of North Dakota Medical School will work in the department of Anatomy under Dr. Horace Marvin.

A man and wife team from Texas—Dr. and Mrs. Thomas R. Henderson—have joined the biochemistry staff. An addition to the Microbiology Department is Dr. John H. Cross, Jr., who comes from the University of Texas School of Medicine at Galveston, and who has specialized in parasitology.

In the department of Pediatrics, headed by Dr. T. C. Panos, a practicing physician has been added. He is Dr. Spencer G. Thompson who moved to Little Rock from Urbana, Ill.

Dr. Thomas C. Wilson has moved to Dermott and opened his office for the practice of medicine. He is a graduate of the University of Arkansas School of Medicine,

FEATURES

and served his internship at the University Hospital. He then practiced in North Little Rock until moving to Dermott.

Dr. Ben E. Dewbre, Jr., is now occupying the new Marked Tree Clinic at Marked Tree, Arkansas. He practiced at Tyronza before moving to Marked Tree. Dr. Dewbre is a graduate of the University of Tennessee School of Medicine and served in the Air Force as Flight Surgeon from 1954 to 1959.

A \$26,000 research grant has been awarded to Dr. Ted Kniker, instructor-doctor in the Department of Pediatrics at the Medical Center and a research fellow for the National Tuberculosis Association. He will conduct his studies over a three-year period. The grant was provided by the Federal Public Health Service.

One of the aims of Dr. Kniker's research will be to find a more dependable blood test method of diagnosing tuberculosis, which would cut the testing time for the disease to a much shorter time than the present tests.

Dr. and Mrs. Stacy R. Stephens of Fort Smith sailed July 15 from New York for Denmark, where he will spend the coming year in medical research. Dr. Stephens, a graduate of Johns Hopkins Medical School, Baltimore, served his internship in Baltimore and has had one year of graduate study at the medical school to which he will return for two years more of study and research after his year abroad.

The residents of Pea Ridge, Arkansas now have the services of a local medical doctor for the first time since World War II. Dr. T. B. Collum, a native of Mississippi, recently opened an office in Pea Ridge. He graduated from the University of Arkansas School of Medicine and practiced in Strong, Arkansas prior to moving to Pea Ridge.

Dr. James J. Greenhaw recently opened his office in Springdale for the practice of medicine. He practiced at DeQueen before moving to Springdale.

Dr. Evan J. Kurts, a native of Mississippi, has opened his office in West Helena for the practice of medicine. He came to West Helena from Oklahoma.

Dr. Thomas W. Snider, formerly of the University of Arkansas Medical Center, has begun his second year of residency in radiology at the Johns Hopkins Hospital at Baltimore, Md.

Dr. Orval E. Riggs has opened his office for practice of general surgery in Jonesboro. He is a native of Walnut Ridge, and had practiced in Walnut Ridge for two years before taking specialized training in surgery.

Perry County's medical program was revitalized in July with the appointment of Dr. Benjamin C. Hyatt, a native of Hope, as the new Medical Director. Dr. Hyatt comes to Perryville from Municipal Hospital at Beaumont, Texas, and he takes the place of Dr. Carroll Shukkers who moved to Mt. Ida earlier in the year. Since Dr. Shukker's departure the clinic has been functioning with fill-in doctors, including Dr. Nils Pehrson and Dr. Byron Grimmett, both of Little Rock.

Dr. William O. Young, a psychiatrist, has been appointed a consulting psychiatrist for the Mental Health Department, Dr. J. T. Herron has announced. The Mental Health Division provides consultation and training seminars for professional and lay groups interested in the development of mental health programs in communities. Dr. Young will retain his private practice while assisting with the state-wide work of the Health Department.

Dr. R. B. Robins of Camden attended the Democratic convention in Los Angeles and actively opposed socialized medicine. While in Los Angeles Dr. J. Vincent Askey, president of the American Medical Association, feted Dr. Robins with a party at the Jonathan Club. Also attending the dinner were Dr. L. H. McDaniel of Tyronza and the Arkansas delegates to the convention. Upon his return to Arkansas, Dr. Robins addressed the Camden Rotary and Lions Clubs, speaking on the subject, "My Interpretations of the Democratic National Convention."

Dr. Clements D. Burroughs, a retired Navy officer, has located in Pine Bluff,

FEATURES

where he is associated with Drs. Anderson and McDonald in the practice of Radiology.

Dr. Daphney Earl White of El Dorado was elected president of the Arkansas Chapter of the American College of Surgeons at the conclusion of the chapter's annual two-day meeting at Hot Springs in July. Other new officers include Dr. Haymond M. Harris of Newport, vice president, and Dr. James G. Stuckey of Little Rock, secretary-treasurer.

Dr. M. C. Hawkins Jr., of Searcy, was moderator of a scientific panel dealing with "Trauma" at this July meeting of the Arkansas Chapter of the American College of Surgeons. His particular phase of the discussion had to do with abdominal injuries.

Dr. Richard V. Ebert, head of the Department of Medicine at the University of Arkansas School of Medicine, has been appointed to the editorial board of the Archives of Internal Medicine, a publication of the American Medical Association.

Dr. Bill Parker has recently joined the Loveless Clinic in Booneville. Dr. Parker has just completed his internship at St. Benedict's Hospital, Ogden, Utah.

Ear, nose and throat doctors from 10 Southern states attended a meeting of the Southern Section of the American Otorhinologic Society for Plastic Surgeons at Little Rock, in July. Arkansans attending the meeting were Dr. Norman Fein, Dr. E. L. Milner, Dr. John Wm. Smith, Dr. Ted Bailey and Dr. Paul L. Mahoney, all of Little Rock, and Dr. Bob Atkinson of Hot Springs.

Dr. W. E. Roark has moved to Yellville and opened his office for practice of internal medicine. He comes to Yellville from Jacksonville, Texas where he practiced for several years.

Dr. William Joseph Flanigan, specialist in kidney research and internal medicine, has been awarded an \$8,870 research fellowship from the National Foundation. He will use the fellowship for a year of research at the biophysical laboratory of the Harvard University Medical School at Boston.

Dr. Flanigan is a graduate of the University of Arkansas School of Medicine.

Dr. W. J. Jones, Glenwood physician, was stabbed twice when he attempted to administer medical aid to a berserk lumber company employe early in August.

Dr. James Gentry Thomas is completing a three year residency in Neurology in the New York University Hospital system. Dr. Thomas is a graduate of the University of Arkansas School of Medicine, and for a year before going to New York was associated with Dr. G. G. Hairston of Prescott in general practice.

Proceedings of Societies

More than forty persons enjoyed a barbecue with all the trimmings given at the Monticello city park, August 10th by the Drew County Medical Assistants for the doctors and their families.

Mr. Storm Whaley, Vice President in charge of Medical Education, University of Arkansas, was the speaker at the July session of the Ouachita County Medical Society held at the Camden Hotel.

New Members . . .

Dr. Merrill J. Osborne is a new member of the Mississippi County Medical Society. He is a native of Manila, Arkansas, and received his preliminary education at the University of Arkansas. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1958. Dr. Osborne is now associated with the Payne-Osborne Clinic in Blytheville.

Dr. Van Smith is a new member of the Boone County Medical Society. He is a native of Hope, Arkansas, and received his preliminary education at Hendrix College. Dr. Smith received his M.D. degree from the University of Arkansas School of Medicine in 1956. His specialty is Internal Medicine and he now has opened his office in Harrison.

Dr. Charles A. Spears has been accepted for membership in the Boone County Medical Society, he is a native of Coalgate, Oklahoma and received his preliminary education at the University of Arkansas. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1958. Dr. Spears' office is at 209 N. Wil- low in Harrison.

Dr. Parcell Smith, Jr., has transferred his membership from the Washtenaw County Medical Society in Michigan to Pulaski County. He is a native of Little Rock, Arkansas and received his prelim- inary education at Conway, Arkansas. His M.D. degree was obtained from the Uni- versity of Arkansas School of Medicine in 1953. He served an internship at the St. Louis City Hospital from 1953-1954, was in the U. S. Air Force from 1954 to 1956. Before joining the Cazort, Johnson Clinic he was an instructor in the Department of Internal Medicine at the University of Michigan Hospital.

A new member of the Madison County Medical Society is **Dr. Ivan H. Box**. He is a native of Decatur, Arkansas, and re- ceived his preliminary education from the University of Arkansas. He received his M. D. Degree from the University of Ar- kansas School of Medicine in 1956. Dr. Box was in the U. S. Army from 1956 to 1960. He is a general practitioner with his office at Huntsville.

CONTRIBUTORS TO THE AMERICAN
MEDICAL EDUCATION FOUNDATION,
JULY 1960

Dr. Kenneth R. Duzan, El Dorado	\$ 5.00
Dr. George C. Burton, El Dorado	5.00
Mrs. Warren S. Riley, El Dorado	8.00
Mrs. C. E. Tommey, El Dorado	10.00
Mrs. David Yocum, El Dorado	10.00
Woman's Auxiliary to the Union County Medical Society, El Dorado	10.00
	<hr/> \$48.00

Book Reviews

THE FAMILY MEDICAL ENCYCLOPEDIA. By Justus J. Schifferes, with a Medical Advisory Board of eight doctors. Not illustrated, pp. 617, 1959. \$3.50. Little, Brown and Company, Boston, Mass.

This book is well written and is recommended as an interesting, authoritative source of informa- tion for lay reading. It is unfortunate that there is not more of an effort to teach elementary human anatomy and human physiology in the public schools. The interested lay person has to consult his physician or a book for elementary information. This little encyclopedia provides accurate, con- densed information. Perhaps the only objection to this is the fact that it is almost overly technical. This book is definitely recommended as a family medical encyclopedia.

THE CEREBROSPINAL FLUID: Ciba Founda- tion Symposium. Edited by G.E.W. Wolsten- holme, O. B. E., M. A., and Cecelia M. O'Connor, B. Sc. pp. 335. Illustrated. \$9.00. Little Brown & Co.

Ciba Foundation's widely recognized symposia in many fields has produced this volume which is an exhaustive study of the cerebrospinal fluid— its production, circulation and absorption. There is considerable discussion of the anatomy and physiology of the production of the fluid. The elemental concepts are augmented by the latest theories and conjectures on the mechanism of the fluid's production and absorption and the modern theories connected with its use and fate. There are many reports of modern research in this field. The volume is an important handbook for researchers and teachers in the field and represents another contribution of Ciba Foundation to medical research.

PRACTICAL DERMATOLOGY: Lewis, George Morris, M. D., F. A. C. P., Professor of Clinical Medicine (Dermatology), Cornell University Medical College; illustrated, pp. 363, Second Edition 1959. W. B. Saunders & Company, Phil- adelphia and London.

This is more a handbook than a complete text- book of dermatological diseases. It is well illus- trated. It is completely conventional in format. It is exceptionally well organized. This book is recommended to medical students and to general physicians.

UROLOGY IN GENERAL PRACTICE. Frank Coleman Hamm, M. D., Sidney R. Weinberg, M. D. J. B. Lippincott Co. Philadelphia 5, Pa. pp 291. September, 1958. \$6.00.

This is a well prepared textbook on urology. There are numerous excellent diagrams and pictures in it. Urological procedures are well described. This book is quite complete. It will be of interest to medical students, housestaff, general physicians and urologists.

ANATOMY AND PHYSIOLOGY FOR NURSES. W. Gordon Sears. The Williams & Wilkins Com- pany. Baltimore 2, Maryland, pp. 376. 1958. \$3.50.

This book is a minimal textbook of anatomy and physiology. It is designed for the instruction of nurses and seems very complete. It emphasizes anatomy. It is well written although it tends to be somewhat tedious as it is in outline form. All in all, this seems a very worthwhile book and the only criticism that can be directed at it is that it might contain more detail than is necessary for teaching nurses.

TREATMENT IN INTERNAL MEDICINE.
Harold Thomas Hyman. J. B. Lippincott Company. Philadelphia, Pa. pp. 609. November 1958. \$12.50.

Dr. Hyman's textbook of Treatment in Internal Medicine seems to be a well integrated book. It is aimed at the physician in general practice and is recommended by the reviewer. It contains a roster of commercially available drugs. It contains a moderate number of helpful charts and a few illustrations. The format of the book is conventional with divisions similar to the general outline used in the Standard Nomenclature of Disease and Operations. There is nothing really new in this book. It is well written and it is recommended as a fair summary of treatment; it could be used as a guide but certainly not a complete means of therapy of difficult cases.

LETTERS TO THE EDITOR

July 26th, 1960

Dr. J. J. Monfort, President,
Arkansas Medical Society,
North Arkansas Clinic,
Batesville, Arkansas.

Dear Dr. Monfort:

Re: Dr. John F. Smith, deceased
Policy GW 3312-367

The Northwestern National Life Insurance Co. had my late husband insured under the above numbered policy through the Arkansas Medical Society Group Plan. They have delivered me a check as beneficiary in the full settlement of \$10,000.00.

Among my husband's papers I find correspondence wherein he insisted he was uninsurable and felt that he was not entitled to the coverage. However, in turn, the company insisted that he was, since he was in active practice. The policy was issued August 1, 1959.

Certainly I am grateful to the insuring company, and to the House of Delegates of the Arkansas Medical Society, whom I understand made this plan available to the practising members of the Society, regardless of their physical condition. Will you please express my thanks and appreciation to all concerned in arranging the Group Plan.

Thanking you, I am

Sincerely,

Ethel M. Smith,
304 Academy Avenue,
Paris, Arkansas

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

SOME PRACTICAL ASPECTS OF THE SMOKING-CANCER PROBLEM

ERNEST L. WYNDER, M.D. and
DIETRICH HOFFMANN, Ph.D.*

The most effective way to alleviate the smoking-cancer problem would be to stop smoking or reduce it to a minimum. Practical measures for reducing the smoke condensate per cigarette are: the use of effective filters, less tobacco per cigarette, tobacco selection and highly porous cigarette paper.

The majority of those who have investigated the epidemiology of lung cancer are in agreement that smoking, particularly of cigarettes, represents one of the causes of cancer of the lung. Several health authorities have publicly supported this view. These include the United States Surgeon General, Leroy Burney, the Director of the National Cancer Institute, John Heller, the American Cancer Society, the Health Commissioner of the State of New York, Herman Hilleboe, and the public-health services of Great Britain and the Netherlands. It is no longer an argument whether smoking affects the development of lung cancer, but rather a question of how the risk of the smoker can be avoided or reduced. The present report is designed to provide some practical answers to this question.

PREVIOUS DATA

It is an accepted principle in carcinogenesis that the greater the exposure to a carcinogen, the greater the risk of cancer. This has also been established for tobacco smoke. Retrospective as well as prospective studies have shown that the risk of lung cancer rises with the number of cigarettes smoked. The Hammond and Horn report in 1958 showed that the non-smoker's incidence of lung cancer is 3.4 per 100,000 per year, and that of a person smoking half to one package a day is 59.3; those smoking between one and two packages have a risk of 143.9; and those smoking more than two packages 217.3. The importance of smoke condensate yield has recently been demon-

*From *New England Journal of Medicine*, March 17, 1960.



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LOMOTIL represents a major advance over the opium derivatives in controlling the propulsive hypermotility occurring in diarrhea.

Precise quantitative pharmacologic studies demonstrate that Lomotil controls intestinal propulsion in approximately $\frac{1}{11}$ the dosage of morphine and $\frac{1}{20}$ the dosage of atropine and that therapeutic doses of Lomotil produce few or none of the diffuse untoward effects of these agents.

Clinical experience in 1,314 patients amply supports these findings. Even in such a severe test of antidiarrheal effectiveness as the colonic hyperactivity in patients with colectomy, Lomotil is effective in significantly slowing the fecal stream.

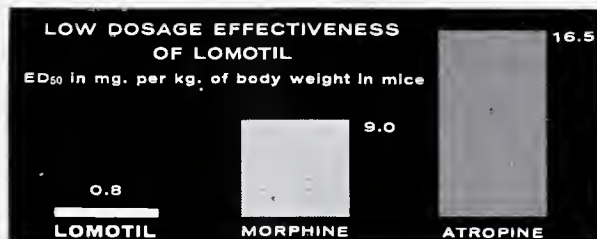
Whenever a paregoric-like action is indicated, Lomotil now offers positive antidiarrheal control . . . with safety and greater convenience. In addition,

as a nonrefillable prescription product, Lomotil offers the physician full control of his patients' medication.

PRECAUTION: While it is necessary to classify Lomotil as a narcotic, no instance of addiction has been encountered in patients taking therapeutic doses. The abuse liability of Lomotil is comparable with that of codeine. Patients have taken therapeutic doses of Lomotil daily for as long as 300 days without showing withdrawal symptoms, even when challenged with nalorphine.

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DOSAGE: The recommended initial dosage for adults is two tablets (5 mg.) three or four times daily, reduced to meet the requirements of each patient as soon as the diarrhea is controlled. Maintenance dosage may be as low as two tablets daily. Lomotil, brand of diphenoxylate hydrochloride with atropine sulfate, is supplied as unscored, uncoated white tablets of 2.5 mg., each containing 0.025 mg. ($\frac{1}{400}$ gr.) of atropine sulfate to discourage deliberate overdosage.



EFFICACY AND SAFETY of Lomotil are indicated by its low median effective dose. As measured by inhibition of charcoal propulsion in mice, Lomotil was effective in about $\frac{1}{11}$ the dosage of morphine hydrochloride and in about $\frac{1}{20}$ the dosage of atropine sulfate.

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Research in the Service of Medicine

strated again in butt-length studies. One study has shown that the average butt length of the British smoker is 18 mm. as compared to 30 mm. for the American smoker. This difference may account for the higher rate of lung cancer in England.

The amount of smoke condensate that comes into contact with the lung also depends upon the degree to which the smoker inhales. A majority of the published studies indicate that patients with lung cancer tend to inhale more than the control population.

The available studies indicate that a reduction in the yield of smoke condensate of a cigarette and a reduction in the amount that comes in contact with the lung will be followed by a reduction of the risk of lung cancer. The purpose of the present investigation is to determine how these ends can best be achieved and what progress has already been made in this field.

METHODS

We determined the amount of smoke condensate of the ten leading American cigarette brands. The results appear in the table. In a special study we changed the frequency of the puff to two and three times per minute and found that such a change increases the yield of smoke condensate. In another experiment we compared the quantity of smoke condensate collected for the first 30 mm. of an 85 mm. cigarette to quantity from the second 30 mm. of such a cigarette. The second half of the cigarette contained 43 ± 2.2 per cent more smoking condensate than the first half.

We also studied the ultraviolet fluorescence of inhaled and noninhaled cigarette smoke to determine how much of the fluorescent material is absorbed upon inhalation. These studies show that long term smokers absorb 80 to 95 per cent of the condensate upon deep inhalation.

Amount of Smoke Condensate Contained in the Leading Brands of American Cigarettes.

Brand	National Position by Sales, 1959	Type	Size mm.	Smoke Conden- sate per Cigarette	Nicotine per Cigarette
				mg.	mg.
Chesterfield	6	Plain	85	39.8 ± 2.0	2.66 ± 0.14
Pall Mall	2	Plain	85	35.1 ± 1.8	2.42 ± 0.12
Camel	1	Plain	70	30.2 ± 1.5	2.04 ± 0.10
Lucky Strike	4	Plain	70	28.6 ± 1.4	1.87 ± 0.10
Salem	7	Filter	85	26.0 ± 1.3	1.86 ± 0.10
Winston	3	Filter	85	23.0 ± 1.2	1.70 ± 0.09
Viceroy	9	Filter	85	21.4 ± 1.1	1.29 ± 0.07
L & M	8	Filter	85	21.3 ± 1.1	1.37 ± 0.07
Marlboro	10	Filter	85	20.3 ± 1.1	1.32 ± 0.07
Kent	5	Filter	85	17.7 ± 0.9	1.04 ± 0.06

To compare the benzo(a)pyrene content of the smoke condensate of the two leading American non-filter and filter cigarettes, chemical determinations of this, the most potent carcinogenic compound so far identified in tobacco-smoke condensate, were made with the use of a method previously reported. The higher the smoke condensate of a given cigarette, the greater the exposure of the smoker to polycyclic hydrocarbons.

DISCUSSION

For some years our group has been concerned with the marked increase in lung cancer and the related role of cigarette smoking. In 1940 the number of deaths from lung cancer in the United States was 5,353 for males and 1,626 for females. In 1950 14,922 deaths from lung cancer occurred in males and 3,391 such deaths were reported for females; the figures for 1957 are 26,287 and 4,489 respectively. The most effective way to alleviate the problem would be to stop smoking or at least to keep it to a minimum. However, it seems difficult to educate the public effectively in this respect.

The following measures that should lead toward reducing the risk of cancer of the respiratory tract among smokers are suggested: moderation of smoking for those who cannot give up the habit; use of filter cigarettes with the lowest yield of smoke condensate; avoidance of smoking the cigarette to the butt since there is significantly more smoke condensate from the latter part of the cigarette; and not inhaling deeply since such a practice leads to much greater absorption of smoke condensate by the lungs.

The benzo(a)pyrene content of various cigarette-smoke condensates is similar when judged on a gram-for-gram basis. Per cigarette, however, it increases together with an increase in the amount of smoke condensate. Thus, the user of a cigarette with a high yield of smoke condensate will be exposed to more benzo(a)pyrene than one smoking a cigarette with a lower yield.

Filter cigarettes tend to diminish symptoms, especially that of cough, often found to be associated with smoking.

Further research must be carried out in an attempt to reduce carcinogens and co-carcinogens from tobacco-smoke condensate.

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Introduction to the Symposium on Trauma*

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There has always been a need for medical interest in trauma from the time of the first tribal medicine man. Traumatic injuries have always been worthy of the physicians interest for such injuries frequently afflict the most productive members of the society and the speedy return of these individuals to their former state of good health is rewarding. In contrast to many illnesses which are obscure and require much complicated diagnostic equipment, the problem of injured patients is usually straight forward.

The impact of injury upon our society has been emphasized many times recently through comparison of yearly death rates from accidents to losses suffered in the devastation of wartime. The American College of Surgeons and the American Board of Surgery have done their part to stimulate an interest in the scientific practice of and training in traumatic surgery. In general the hope has been that the physician's ability to care for traumatic injuries will keep pace with the ever increasing numbers of injured in our society with its thirst for increased availability of rapid transportation and increasing use of machine tools in industry, at home and on the farm.

As the program for today was formulated, it was obvious that the discussion would center about the practical treatment of the injured patient after he had been admitted to the hospital. While no attempt should be made to minimize the importance of hospital surgical care of

the injured, a few minutes might be spent in reviewing some of the other responsibilities of the physician regarding trauma.

Lindsey (1), while discussing the early care of the severely injured, pointed out that the salvage rates of the injured once in the hospital are so good at the present time that an improvement of only a few percentage points may be anticipated even if perfection were achieved. While every effort should be made to approach perfection, serious efforts should be made to search for new fields where greater expansion and improvement of facilities are possible.

One need not search far. There are two general areas with almost untapped potential regarding improvement in fatality rates from injury. Unfortunately, like so many important jobs, neither of these areas command great physician interest because of the lack of direct patient contact. These areas are: (1) the prevention of injuries and, (2) improved handling of patients prior to hospital admission.

For some strange, unexplained reason man resists most attempts at safeguarding his health. At the same time man is equally insistent about his rights to remain well and to be returned to health if made unwell or to be cared for if he cannot be made well. The too often neglected original role of the physician as teacher, should be exploited to its fullest, utilizing the best advertising methods available to inform the public about the hazards which are constantly about him, the inconvenience and suffering which

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may be caused by these hazards and the advantages of such simple solutions as clothing the children with non-inflammable clothing or attaching seat belts to the family automobile. Concerted action by physicians through their patients or by pressure on the governing bodies, could be of inestimable value in the success of a continuing drive for safe practices in the home, at work or on the farm. Improvements in the regulations regarding vehicular transportation in our nation could well be influenced by the calm appraisal of well informed physician groups. Greater consideration of the importance of safety features in the engineering and construction of new highways should be stressed. Pertinent items include the prohibition of traffic obstacles near the right of way and gentle grading of the central and lateral shoulders to allow vehicles leaving the right of way at high speeds to reduce speed slowly in place of the sudden death-dealing stop caused by the carefully engineered drainage ditch now seen along many of our roads.

Perhaps, if physicians and physician groups were sufficiently articulate, safe engineering practices would assume greater importance to the automobile manufacturers and perhaps, the purchasing public could be persuaded that they should give as careful consideration to the safety features in the vehicles as they do to many of the other features which make for present economic success of the current crop of automobiles.

The second problem deals with the treatment of the injured prior to admission to the hospital. With centralization of the physician's effort in the hospital, there has been less and less reliance on the physician and more reliance on trained or untrained laymen for the care of injured prior to hospital admission. To illustrate: Dr. George J. Curry made the following statement in a symposium published in *Postgraduate Medicine* in October of 1956 (2): "I do not think that doctors know too much about immediate care. It is better in the hands of a well-trained ambulance attendant or some other well-trained person." If this trend continues, this early care must deterio-

rate, for who outside the medical profession is qualified to teach the principles of medical care to lay personnel and if the medical men are uninformed on the matter, how can the quality of teaching be anything but inferior and the product worse?

Certainly, increased physician interest in the formulation and presentation of curricula for classes on early care is greatly needed. Unfortunately, the idea has arisen that little can or should be done outside of the hospital. In many instances this leaves little enough to work with when the patient does finally arrive at the hospital. Actually, a great deal can be done prior to hospital admission and perhaps, even more important, a great deal can be left undone which might have caused harm.

On the spot care should include five elements. (1) control of the situation with particular reference to spectators and well meaning bystanders, (2) sorting of the patients as to need for immediate care, (3) application of life-saving treatment, (4) proper preparation of the patient for evacuation and, (5) efficient atraumatic evacuation.

The solution to crowd handling must eventually come through proper education of the public. The bad effects of uncontrolled spectators are seen with every disaster and were illustrated again by two recent news stories. The first dealt with problems caused by a large crowd which assembled at a large metropolitan airport to gaze at the spectacle of a large jet air liner landing after malfunction of the landing gear. The second told of divergence of opinion as regards the proper method of respiratory resuscitation. The first problem caused no actual loss of life, in the second case a small boy died.

Sorting of casualties must begin as soon as the injury of more than one person occurs and should continue until treatment of all has been completed. Infrequency of accidents involving large numbers of injured makes the teaching of casualty sorting according to priority difficult. The principles, however, should be reviewed frequently in preparation for the time when such disasters might strike.

It is not necessary to think only of nuclear disaster as a reason for developing a well planned disaster mechanism for the community or hospital. In fact the natural disasters of floods, fire and wind plus accidents involving large transportation devices provide a much better cause for action than that of imminent nuclear warfare.

All lay people and especially physicians should understand and be able to put into practice the principles of airway restoration and control of major external bleeding by acute pressure. Almost any other complication can await arrival to the hospital. These cannot.

If the above measures have been carried out carefully, and if fractures are properly and securely splinted without additional trauma, the last phase of early

treatment, that of evacuation, is comparatively simple and may be conducted at legal speeds without risk of jolting the patient around in the ambulance or crashing into other innocent vehicles at intersections.

If improvement in the prevention of injuries and the early care of injuries prior to admission to the hospital can be combined with continuing high level of hospital care, a significant reduction in the fatality rate from injury in the United States should be observed in the next few years.

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A Physician's Approach to the Problems Of Aging

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There are today 16 million Americans over 65 years of age. By 1975 there will be 23 million. The *increase* alone is equal to the combined population of the states of Arkansas, Mississippi, and Louisiana. The 20-year increase in life-expectancy since 1900 has produced a "boom" in this segment of the population proportionately greater than the "baby boom" that has received so much attention.

A child born today can be expected to live to the age of 70.5 years. Of more immediate interest and concern, however, is the fact that a 60 year old person today has 17.5 more years of life expectancy — he will probably live to be 77! And during these latter years of life, he will be beset by many complex problems that have only recently been given serious consideration by society and the medical profession.

When there were relatively few people in the category we label aged their problems made little impression on others. Recently by the very force of their numbers, they have created a degree of interest previously unknown. At first glance this interest might appear to represent a basic change in the attitude of younger people toward their elders. I can find no evidence that this is true. On the contrary, Linden's(1) observation may well be the prevailing sentiment even today. He said: "Progress in science is interpreted as a harnessing of nature. As long as an individual supports his fight against many of the forces of nature, he is permitted to keep his membership in the society of masters of nature. But the older person is seen as one who has lost his fight with nature . . . By social standards, he is a weakling and an outlander, unworthy of intensive consideration or high valuation."

This attitude has not always prevailed. Historically, the aged have enjoyed a special place in the community — they represented the accumulated wisdom and skills of their society. Their advice was sought by the young members of the group because their knowledge and experience were needed to solve the many technical, political, and social problems of the community. Respect for age was a fact and not just a slogan.

The difference in attitude toward the elder members of society today can be explained in part on the basis of the *rapidity of change*. According to Arnoult (2), "The particular way of life that we call Western Culture has changed more in the last 200 years than it changed in the previous 2000; and, what is more, the rate of this change is constantly accelerating." This is easily seen in the practice of medicine, where advances in the past 50 years are greater in scope and in their effect on humanity than those of the previous 2000 or more. If the best physician of 1909, or of 1940 for that matter, had continued to practice medicine without change, he would by now be branded a hopelessly incompetent quack.

The rapid rate of change has placed constant and increasing demands on all members of our society to adjust to these changes. Many are not equipped — physically, emotionally or intellectually — to do so. So, as the saying goes, time passes them by.

It is not unusual for technological progress to make a skill or even an entire trade obsolete. How many blacksmiths, for example, are still around? And in medicine, what has happened to the specialty of syphilology?

The rapid rate of change that characterizes the 20th century is not limited to technical advances, however. Political and sociological changes are occurring at an unprecedented rate and are exerting a

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tremendous influence on the lives of all of us.

For the most part, it is the young people, with new ideas for solving old problems, who are pacing these changes. This has had the effect of removing the older generation from its traditional position of stature and respect. Supplanting it is the younger, more dynamic group that is believed to be able to produce something new and better. "More often than not the patriarch is regarded, not as a repository of wisdom, but as an 'old fogey'."

(2) After all, who ever heard of a "grand old man" of nuclear energy?

It would appear that the basic, underlying problem of the aged is their "role" of having no role to play in our modern, rapidly-changing world. They have no real status in our society. The answer to the problem, therefore, must lie in *improving the status* of the aged in our society.

There are four facets that must be considered here — social, economic, political and medical. All are interdependent, and each must be regarded as a portion of the total problem rather than a separate entity.

How real this interdependence is is shown by Havinghurst (3). He lists several factors as determining a person's ability or inability to function socially above the level of his physical equipment. He *can* do so, if: (1) he possesses skills and habits that persist after the ability to learn new skills and knowledge decreases;

(2) he lives in a society that offers status and prestige to older people; and

(3) he remains free of the infirmities that reduce his power to function socially (e.g. physical or mental deterioration, domestic difficulties, financial dependence).

On the other hand, he *cannot*, if:

(1) his occupation requires physical vigor;

(2) he lives in a youth-oriented society that shows no respect but lip-service to the elderly (e.g. early, forced retirement); and

(3) his functioning efficiency is re-

duced by such infirmities as poor health, financial or family difficulties, etc.

With the rapid increase in the number of aged persons paralleling the accelerated pace of urbanization and industrialization in our society, it was inevitable that many of these old people developed "social disability". This term can be construed as including occupational and physical incapacities and the economic disintegration that often follow. The close relationship of the medical, economic and political factors with the overall social problem is apparent. Also apparent is the interest now being shown by at least two groups in attempting to solve this problem. These groups are the medical profession and the political leaders.

Mr. Rowland Kennedy, Executive Secretary of the Mississippi State Medical Association, drew the issue into sharp focus in his March 1958 "Newsletter": "Top nomination for the most dynamic — and probably least understood — problem in the medicolegal arena today is medical care for America's aged . . . Both sides of the fence, enlightened free enterprise leaders and the social welfare planners, realize that the care-for-the-aging problem is urgent. A substantial segment of senior citizens has low or no income, no health insurance plan, are not productively employed, but nearly all vote."

It boils down to this: efforts to solve the many-faceted problems of an aging population will increase. Furthermore, these efforts will be primarily directed at the two areas so clearly in need of solution. One area might be labelled "a place in society," meaning that more social and economic opportunities will be made available to the aged. We can assume that this will occur — the political facts of life do not permit any other inference. It can be said without cynicism that twenty-three million is a lot of voters.

The other area is "medical care." This refers to a continuing need to foster scientific progress in preventing and treating the illnesses of the elderly; but additionally, it involves the necessity of making medical care available at reasonable cost. It is this latter aspect of the medi-

cal area particularly that contains political and socio-economic connotations as well as scientific. For this reason, our profession must offer some answers to the questions that 23 million people will be asking. I have heard medical leaders complain that the difficulties of the aged are only 5% medical but that doctors were being forced to assume a much greater proportion of the burden of solving the over-all problem. Might I suggest that it is no longer a question of whether good medical care is a right or privilege or who will find the answer. The question is: How will adequate medical care be provided? If we don't find an answer, others surely will — and it may not be to our liking.

Attempts to meet the health needs of older people are increasing as the number of aged persons grows larger. As yet unanswered are the questions, "how?" and "by whom?". Physicians are properly concerned with developing and utilizing new ways of combatting disease, and in this field they are doing well. But is it not just as important for us to assume the leadership in seeking ways of insuring that the products of science are readily available to the people who need them?

Let us assume that the status of the aged in society is determined by the several factors already mentioned. Let us assume also that such problems as disregard of the elderly — as manifested by the cluttering of nursing homes and mental institutions with unwanted parents — is one that all citizens must face. But let us focus our attention for the moment on what we can do *as physicians* to meet the challenge of the problems of the aged.

Scientific research is one weapon that medicine has already begun to use extensively and effectively. In the field of cardiovascular disease — killer of one million Americans a year — much has been accomplished in the last ten years. Anticoagulants, hypotensive agents, surgery of the heart and blood vessels — these are but the more dramatic of the countless new methods of prolonging life and making life more comfortable.

More recently, the new diuretic and hypotensive-potentiating drugs, chlorothiazide and hydro-chlorothiazide, have offered new hope and greater comfort to people suffering from cardiovascular and renal diseases. The painful death of carcinoma and the living death of senility are under attack from the meprobamate and promazine drugs.

The social and psychological, as well as the physical, aspects of aging are being studied extensively. The effects of *fear* and *loneliness* in producing illness — and in complicating pre-existing diseases — have become well known to physicians. Sociologists and psychologists are working with medical scientists to add to our knowledge of the inter-action of mind, body and environment. Research is providing many answers, but research is not the *whole* answer. As a weapon against disease, it is like a long-range gun without an aiming mechanism: it is *usable*, but alone and unaided it is *not useful*. It needs to be given a sense of direction before it can hit the target.

Physicians can use the products of research as they become known to us. We can use them, that is, to benefit those people who are in a position, physically, mentally and financially, to take advantage of them. Actually there are many people who *can* be helped but who are *not* receiving optimum benefit from advances already made. Of the several factors responsible for this, three stand out.

One of the most pressing needs in the care of elderly patients is adequate physical facilities. General hospital rooms are prohibitively expensive for patients with chronic illness — and as the old folks are told so frequently, the beds are needed by someone younger and more acutely ill. Existing facilities for nursing-home and convalescent care are of such diverse quality that little confidence is placed in a great majority of them. They exist under state licensure laws that are, in many cases, too lax to be helpful, and they are not subject to inspection by a voluntary accrediting agency, such as the Joint Commission on Accreditation of Hospitals.

Doctor Kenneth Babcock (4), director of the Joint Commission, said recently

that if voluntary agencies do not establish a system for evaluating nursing homes soon, "the government is going to have to." Doctor Babcock is probably right: the government, like nature, abhors a vacuum.

Convalescent wings of general hospitals and more properly-supervised nursing homes are considered by many to be the answer to this problem. These facilities would have the advantage of offering medical supervision without the extremely high overhead costs of regular hospital beds. In some cases, existing physical plants could be used, provided the quality of nursing care met certain standards. But in general, a major building program would be necessary to supply the anticipated demand.

Assuming that this approach is the correct one — and it certainly is better than none at all — who is going to build these facilities? Even that question is premature until we can answer this one — is anyone interested enough to beat the drums to get these projects underway? As physicians, we see the need. Perhaps we had better start thinking about it — and coming up with some ideas.

The second pressing need in a health program for the aged is a means of meeting the costs of medical care. According to Mr. Marion Folsom (5), former Secretary of Health, Education and Welfare, "about half of the people aged 65 or over . . . have *no* insurance against medical care costs." Yet McLaughlin (6) has shown that people over 65, while constituting only 8% of the total population, account for 40% of the total number who suffer incapacitating physical illnesses of more than 3 months duration. The economic implications of this fact are tremendous. It is generally recognized, at long last, that this situation must somehow be improved. Recognition of this urgent need has begun to spawn a number of plans for meeting it.

President Eisenhower's unsuccessful attempt to have the federal government develop co-insurance agreements with private insurance companies may be renewed. H. R. 4700, well known as the Forand Bill, has been discussed at length by many.

It would have the federal government foot the hospital and surgical bills for about 13 million persons eligible for Social Security benefits. Most of the recipients would be people over 65 years of age. While the co-insurance proposal differs in many respects from the Forand Bill, both plans would be financed by the only source the government has — the taxpayer.

Those who take a dim view of such schemes should be interested in a type of voluntary hospital and medical-care insurance that is based on the concept of providing adequate coverage for severe and lengthy illness at a realistic price. It is called "comprehensive" insurance.

Doctor Elmer Hess (7), former president of the American Medical Association, advocates development of this type of coverage for everyone. It appears to be eminently suited to the needs of old people, in particular. It is a plan "which,

- (1) after the individual pays a small initial deductible amount,
- (2) provides reimbursement of a substantial portion (75% or more) of expense incurred for virtually the entire range of medical expenses,
- (3) in or out of a hospital,
- (4) up to high over-all maximum amounts
- (5) without arbitrary fee schedules or other 'inside limits' and
- (6) permits complete freedom in selection of physician, hospital or other source of medical care."

This plan differs in several particulars from conventional coverage, such as that provided in the Blue plans, and from so-called catastrophic coverage with deductible amounts of \$300.00 or more. In comprehensive plans the deductible amount is no higher than \$50.00 and the co-insurance feature starts after the first few hundred dollars. Benefit ceilings are high, up to \$7,500.00 per year, and exclusions are few.

If this type of coverage were made widely available it would certainly solve the problem of medical care insurance for many aged persons. Many others, however, would be unable to purchase this coverage. The question remains — how

would they be provided for? Mr. Forand has an answer. Do we have a better one?

The American Medical Association has joined the American Dental Association, American Hospital Association and the American Nursing Home Association to form the Joint Council to Improve the Health Care of the Aged. The Council is engaged in a far-reaching program of fact finding to determine what might be done to tackle the problems of health care for the aged. Maybe it will find the answers we seek.

The third factor that plays a major part in preventing many elderly people from obtaining optimum health is forced retirement at age 65. Many are ready to retire at 65, it is true; and some must cease their usual activity sooner. On the other hand, a great many people are as vigorous physically and alert mentally at 70 as others are at 55 or 60. The great diversity of individual talent, skill and aptitude, as well as the different rate at which the aging process causes degenerative changes in different people, makes any fixed retirement age an arbitrary one.

A boxer is old at 35, a baseball player is creaking at 40, and a longshoreman must slow down at about 50. But the average worker whose usefulness depends as much on his knowledge and experience as on his physical stamina, may still be productive long after he reaches 65. It is evident, therefore, that some basis other than chronological age is needed to determine a person's fitness for work.

It is in this regard that physicians can and should take the lead in developing physical and mental standards that can be applied to a variety of occupations. These criteria could be used either to assess how well a particular person compares to an established norm, or, better yet, what degree of fitness is needed for a particular kind of work. While conceding that no absolutely infallible method can be found in applying general rules to specific cases, it would seem as if any reasonable plan would be superior to the wasteful and unfair system that now exists.

As a nation, we cannot afford the lux-

ury of forcing 23 million people out of the productive life of the economy. And as physicians, we cannot hope to attain the best results of our therapeutic efforts, if we are hobbled by a retirement policy that disregards individual needs and individual abilities. The way it is, we can advise retirement for those who should retire; but too frequently, we can't keep active those who we know will stagnate if they are forced into inactivity. Maybe we *can* offer something better if we take the time to work on it. It certainly deserves our attention.

In an effort to remove many of the 16 million elderly people from what has been called a status of social disability, physicians can play an important role.

According to Blain (8), "The great majority (of problems) fall into the area of attitudes of the aged toward their surroundings and the attitudes of other people toward them. These attitudes are caused in a large part by the actual conditions which surround them. One of the most important examples of this state of affairs is in the increasing realization that the apathy, slowed-up thinking, much of the disorientation, the appearance frequently of stupidity, are frequently not caused by actual deterioration of the brain with cerebral arteriosclerosis but are, in fact, produced by severe reactionary depression. Signs of this depression are, on many occasions, found to be present when one is able to give the patient enough time to encourage him to come out with his feelings, his hopes and desires, and particularly his discouragements, his frustrations with his family, the obstacles which prevent him from getting anything further out of life. Most of the obstacles are not so much on the physical side, but they are related to retirement, the being unwanted in the home by the children and the grandchildren, occasionally by being dependent, the whole status of living in a world where the older people tend to be discarded at an earlier and earlier age."

Besides fulfilling our general obligations as citizens, and important as it is, I have tried to avoid this rather over-worked theme, physicians can attack the

medical aspects of the problem on four fronts: (1) *Research*, whereby new methods can be found to prevent the mental and physical stagnation that too frequently accompanies aging; (2) development of more *appropriate facilities* with high professional standards, in which care of elderly patients can be provided at a reasonable cost; (3) encouragement of *insurance plans* that will enable the aged to utilize all available resources whenever they need them; and (4) by studying methods, whereby more *realistic criteria* can be found to replace our existing system that forces retirement on people who are still productive and want to remain so.

It is only through this multifaceted approach that we can hope to accomplish the goal that has been stated often, but still looks a long way off — that we must

strive not merely to add years to a person's life, but also to add life to his years.

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Tonography**

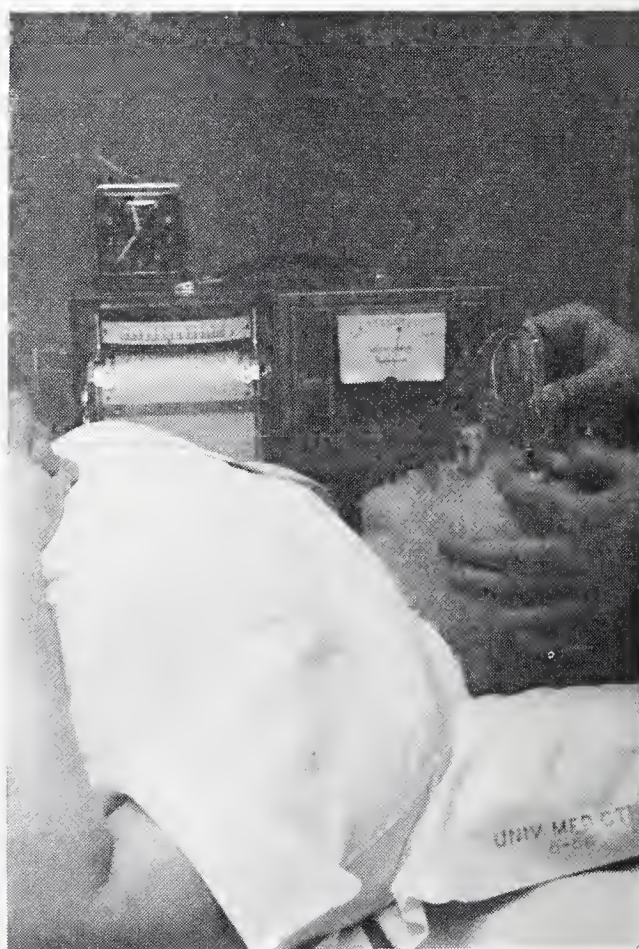
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Tonography is the term applied to a test wherein a measurement of the outflow of aqueous humor from the anterior chamber of the eye is made by applying an electronic tonometer to the corneal surface for four minutes and measuring the fall in ocular pressure over this period of time. The weight of the tonometer upon the cornea causes an indentation of the cornea which increases the pressure within the eye. Since fluid is not compressible, the increased pressure within the eye causes the aqueous to be forced out through the outflow channels at an increased rate. As the aqueous is forced out of the eye, the intraocular pressure drops. By measuring the drop in intraocular pressure one may calculate a coefficient of aqueous outflow. Such a coefficient is known as a C value and is an expression of aqueous outflow in terms of cu. mm/mm Hg pressure/min. The assumption is that the test does not alter the normal formation of aqueous humor and that it does not significantly change the vascularity of the eye.

The test is performed by having the patient lie on his back in a comfortable position with no compression of the jugular or cervical veins. Both eyes are anesthetized with a topical solution. The patient is then requested to fixate upon a target on the ceiling. After the patient is relaxed, the electronic tonometer is applied to the cornea of one eye with care being taken that there is no unusual pressure made upon the globe by the patient's lids or by the examiner's fingers. A tracing to show the fall in the intraocular pressure over the period of the test is made by a recording galvanometer which is connected to the electronic tonometer. The procedure is then carried out on the opposite eye. It is usually better to wait for a period of time before the second eye is tested since there is a consensual

reflex that lowers pressure in the opposite eye during the tonographic testing of one eye.

The calculation of the C value may be easily determined by using the nomograms recently developed by Moses and Becker. This greatly simplifies the determination and makes it possible for the average physician or technician to rapidly obtain a coefficient of aqueous outflow. Furthermore, once a C value is obtained, an inflow value or rate of aqueous formation can easily be determined. Since the intraocular pressure is usually quite steady over fairly long periods of time, one can assume that the aqueous inflow is equal to the aqueous outflow. By knowing the initial intraocular pressure and the aqueous outflow, the C value, and by assigning an arbitrary value to the pressure in the episcleral veins (the channels through which aqueous is drained) one may calculate the inflow rate, the F value.



Technique of performing tonography.

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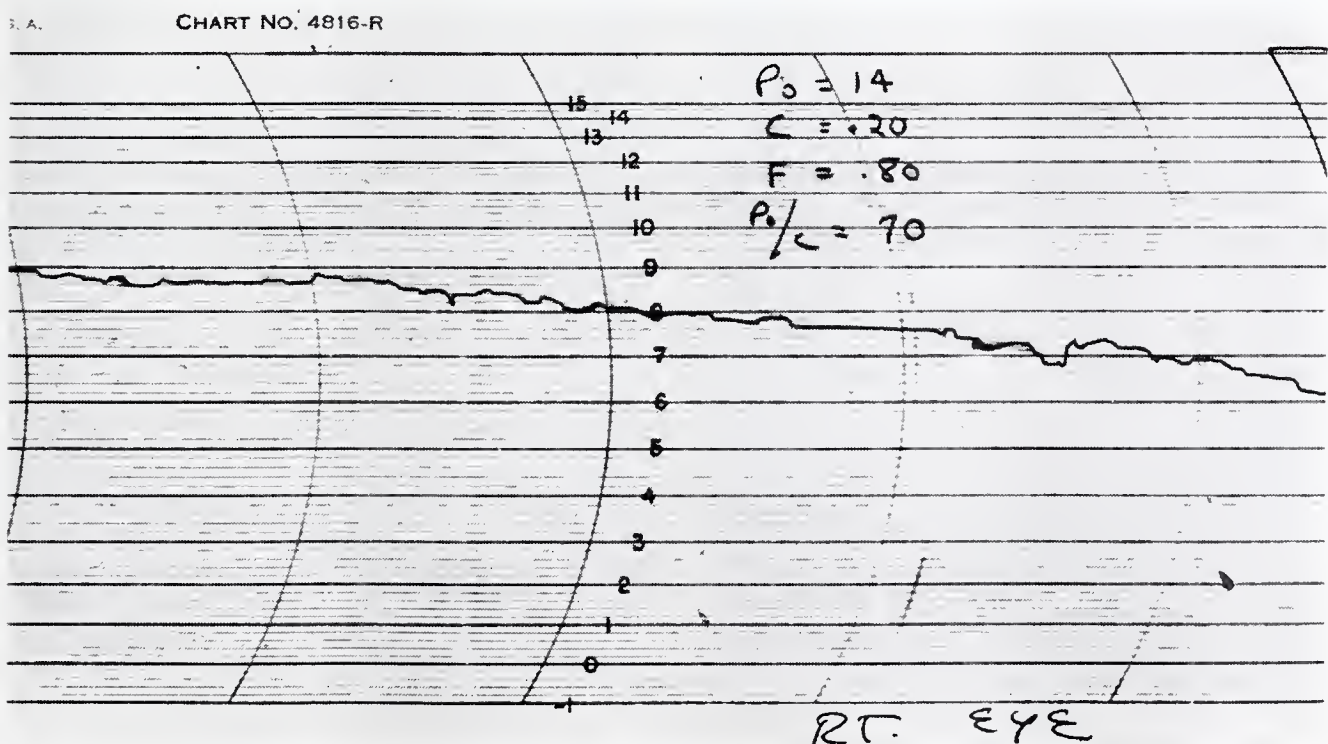
**Presented to the EENT Section, Arkansas State Medical Society Meeting, Pine Bluff, Arkansas, April 19, 1960.

Tonography may be a useful clinical test in two ways. First, it may be valuable in diagnosing early or marginal glaucoma. Secondly, it may be used to more accurately evaluate the effectiveness of the treatment of glaucoma patients. For all practical purposes, glaucoma is a disease that is due to a decreased outflow of aqueous humor. With a decreased outflow of aqueous, there is an increased pressure that develops within the eye. This increased pressure is measured when a standard mechanical tonometer is applied to the eye. Naturally, there is a range of what is considered normal intraocular pressure. For most patients an intraocular pressure of below 21-22 mm Hg. is considered normal. Readings between 23-25 mm Hg. pressure are considered equivocal, whereas pressures of over 26 mm Hg. are definitely considered elevated. The normal range for C values is considered to be 0.20 or above, although a few patients without glaucoma may have C values as low as 0.15.

Observations made by workers in glaucoma research indicate that lowered C values are often found in patients who have only a slight or questionable increase in intraocular pressure. In a recent series Becker has demonstrated that the ac-

curacy of diagnosing early glaucoma is much higher if C values are obtained than if simple tonometry is performed. By utilizing a ratio of initial intraocular pressure/C value, further accuracy is obtained. This ratio, called the P_0/C ratio, is considered normal if it is 100 or lower; values of 100 or above are suspicious of glaucoma. This test was found to be over 90% accurate in the diagnosis of early glaucoma. This is significantly higher than the 39% accuracy that can be obtained in diagnosing early glaucoma if one simply relies upon routine tonometry reading of 25 mm Hg. or higher.

Likewise, the C values and P_0/C ratio can be utilized for evaluation of successful management of glaucoma. The time honored medical management of glaucoma is the use of miotic drops. Miotic drugs, such as pilocarpine and eserine, act to reduce intraocular pressure by increasing the outflow of aqueous humor. Recent studies indicate that if the C value is increased to 0.20 or higher or if the P_0/C ratio is decreased to 100 or lower, there is over a 90% possibility that there will be no further loss of visual fields due to glaucoma. This is in sharp contrast to the reliability of simple tonometer readings alone. In this latter test there is only a



Example of a tonographic tracing.

54% chance of no further field loss if the intraocular pressure is 24 or lower, and a 74% possibility of no further loss if the pressure is 20 or lower. Thus by utilizing tonography and determining C values and Po/C ratios one can be more certain of the treatment and prognosis.

Unfortunately there are some difficulties and sources of error in tonography that makes the test somewhat impractical and unreliable. For this reason some ophthalmologists feel that this test should be reserved for use in large medical centers, both as a clinical and a research technique. However, with the growing accumulation of tonographic data in glaucoma patients, the test becomes increasingly useful and reliable for clinical use.

Though the principles of the test are quite simple, the actual practice of performing the test is not without difficulties. Because the intraocular pressure may be artificially raised by patient apprehension or by external pressure upon the globe, certain techniques must be learned by the person performing the test. It is not always easy to keep the electronic tonometer in place on the cornea for four minutes without some movement of the examiner's hand or the patient's eyes. It is probably correct to say that accurate tonographic tracings cannot be obtained and interpreted until the examiner has performed several hundred tests. One must learn to interpret certain artificial deflections in the tracing that might result from a change of position of the tonometer or of the patient's eye.

There are other possible sources of error than the mere physical difficulties in performing the test. The electronic tonometer or the recording galvanometer may fail to function properly, either because of some electrical circuit disturbance or because of rough handling of this sensitive instrument. Daily calibrations are needed to insure that the equipment is functioning properly before testing is performed. Although these calibrations are made by the examiner, frequently ad-

justments are needed that require that the instrument be sent back to the factory.

Inaccurate values may also be obtained if one does not consider possible unusual rigidity or resistance of the cornea and sclera. Such corneal and scleral rigidities will affect the amount of indentation that the tonometer makes on the cornea and thus give exaggerated or reduced readings, not in keeping with the true intraocular pressure. Though there are ways of correcting tonographic data to allow for scleral rigidity difference, the formulas and nomograms developed for this correction are somewhat complicated for routine office use.

SUMMARY

Tonography is a test to measure outflow of the aqueous humor from the anterior chamber of the eye. The rate of outflow is expressed as a C value, the coefficient of aqueous outflow, and represents the cu mm of aqueous expressed from the eye per mm of Hg pressure applied to the eye by the electronic tonometer per minute of its application. Normal C values are considered to be 0.20 or higher. Decreased C values may precede elevated readings in early glaucoma. C values and intraocular pressure/C value, the Po/C ratio, are valuable criteria in the prognosis of glaucoma. Certain technical difficulties and problems in performing the test limit the value of the test for routine office ophthalmology.

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♦ What's NEW ♦

Vesicoureteral Reflux in Children

JAMES W. HEADSTREAM, M.D.*

Approximately five years have lapsed since Stewart (1) reported on voiding cystourethrography in children. The immense amount of information obtained from this examination makes it one of the most informative procedures developed in several years in the field of Urology.

The problem of congenital bladder neck obstruction complicated by vesicoureteral reflux, as a cause for recurrent urinary tract infection and marked renal deterioration, has been brought into sharp focus by this examination.

In addition to recognition of obstructive uropathy as a cause for persistent or recurrent infection, more bizarre and

seemingly less related symptomatology has been uncovered. Davis (2) reported a large number of infants and young children with diarrhea, convulsive seizures, mental retardation, failure in adequate growth and development, in which obstructive urological changes were proven to be the cause.

Although intravenous urograms are an essential part of a complete urologic study, it has been repeatedly shown that serious vesicoureteral reflux may be present as demonstrated by voiding cystography, in cases found to have a normal excretory or even retrograde pyelogram. (Fig. 1, A and B)

Also it is impossible to predict reflux



Fig. 1,A. Female, age 2, recurrent infection. Intravenous pyelogram essentially normal.



Fig. 1,B. Cystogram, same case, demonstrating advanced upper tract changes not suspected by excretory pyelogram.

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or incompetence of the ureteral orifices on the basis of its cystoscopic appearance. Some cases having every visual physical attribute of competence will demonstrate a major degree of reflux.

Divergent opinions have appeared in the literature in the past regarding the question of whether reflux occurs in the normal child, although there is an increasing awareness of the part that ureteral reflux plays in persistent infection. Several series have been reported to substantiate the premise that reflux is indicative of obstructive uropathy: Keuhnelian (3), Kjellberg (4), Iannaccone and Panzironi (5), and Jones and Headstream (6). Marshall (7) in an extensive article on the subject of vesicoureteral reflux in children concluded that reflux is extremely rare in normal children. (Fig. 2)

The incidence of reflux in 500 children examined for various urologic symptoms was 13.8 per cent as reported by Pasquier, St. Martin, and Campbell (8). Of the cases exhibiting reflux 83 per cent were in female children.

The entire urologic diagnostic armamentarium is usually needed for complete evaluation of a suspected congenital bladder neck obstruction, but the most con-

sistent information is obtained for the voiding cystourethrogram.

The examination is indicated in a male child with one attack of urinary infection and in a female child with two attacks. Infection is frequently a complication of obstruction, and, if pyuria constituted the first indication for urinary tract studies, often means that earlier symptoms were overlooked. All children with abnormalities in the voiding pattern, with or without infection, demand urinary tract examination including voiding cystography.

The technique of voiding cystography is as follows: The examination may be performed with or without anesthesia. Ten per cent organic iodide such as used for retrograde pyelography is introduced through an appropriate sized urethral catheter by gravity at 25-35 cm. water pressure. When the flow stops, by means of a bulb syringe, $\frac{1}{2}$ to 2 ounces of additional media, depending on the size of the child, is instilled. At this degree of filling the child cannot resist voiding. The catheter is removed, and the x-ray exposure is made while the child is in the act of voiding in the supine position.

The treatment of congenital bladder neck obstruction is surgical. Transurethral resection is used initially in all cases of female bladder neck obstruction unless there is some other factor requiring open bladder neck surgery. There is practically no technical restriction to the use of the resectoscope in the female urethra, as even an infant one can be dilated so that the 24F resectoscope will be easily admitted. In infant males, there is obvious restriction in the size of instrument permissible and generally open surgery in the form of a Bonnin Y-plasty is applied. (Fig. 3). Bodian (9) has offered evidence that obstruction in the posterior



Fig. 2. Cystogram, normal.

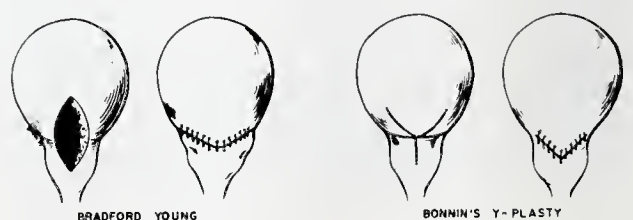


Fig. 3. Drawing, Bradford Young and Bonnin's Y-Plasty.



Fig. 4,A. Male, age 3, with history of infection and obstruction. I.V.P. revealing bladder stone.



Fig. 4,C. I.V.P. 6 months later. Symptoms and infection controlled.



Fig. 4,B. Cystogram following Y-plasty.



Fig. 5. Cystogram using 10 per cent barium sulfate suspension, demonstrating saccule formation on left with intravesical ureter becoming extravesical.

VESICoureTERAL REFLUX IN CHILDREN

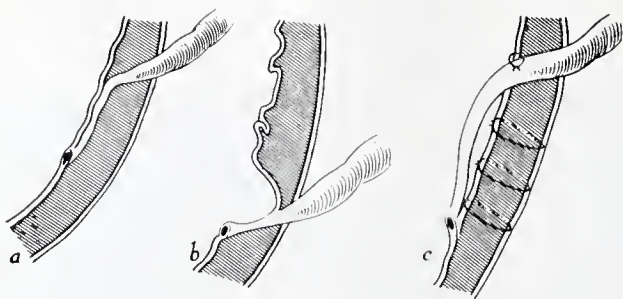


Fig. 6. Illustration taken from Hutch's monograph, *The Ureterovesical Junction*, page 39 (Courtesy of the University of California Press). a) demonstrates the normal relations of the intravesical ureter; b) the relations of the intravesical ureter after changes in the bladder wall permit it to become extravesical; c) the postoperative situation achieved by vesico-ureteroplasty.

urethra in the male exists not only at the vesical neck but throughout as a fibro-elastosis of the posterior urethra. In view of this, the Y-plasty procedure has a better indication in that circumferential scarring is avoided when normal bladder muscle is interposed in this area. (Fig. 4, A, B and C)

Removal of the causative factor for the reflux, by bladder neck surgery, does not

always correct the reflux. After this is accomplished, the associated reflux may follow one of three courses. It may disappear completely; it may persist and be of no further consequence to the patient; or it may continue and result in progressive upper urinary tract damage. The critical factor determining which course the reflux will take appears to be whether or not irreversible changes at the ureterovesical junction have occurred.

Hutch (10) has explained reflux to be based on alterations in the bladder wall which permit the intravesical ureter to become extravesical due to long standing infravesical obstructive changes. (Fig. 5) Hutch has further offered a surgical technique of cystoureteroplasty for correction of these abnormal alterations. (Fig. 6) His technique has been applied successfully in a number of cases and has much to offer in restoration of the upper urinary tract changes in the child suffering from congenital bladder neck contracture. (Fig. 7, A, B, C and D)



Fig. 7.A. Female, age 2, with recurrent infection. Cystogram, demonstrating large bladder with bilateral reflux.



Fig. 7.B. Cystogram nine months after T.U.R. Bladder size and upper tract dilatation improved but continued to reflux and have accompanying attacks of infection.



Fig. 7.C. I.V.P. 1 year after Hutch cysto-ureteroplasty.

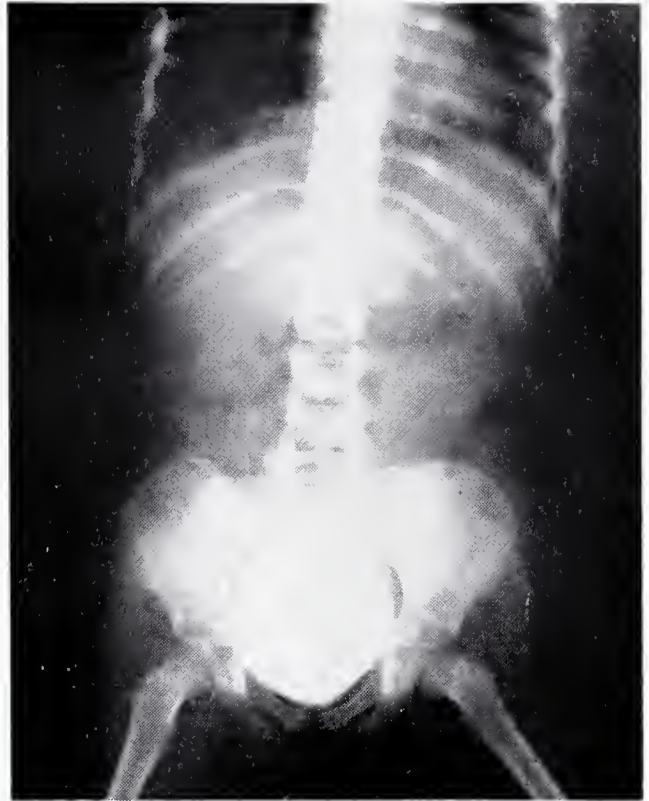


Fig. 7.D. Cystogram 2 years after Hutch procedure. (Note normal bladder size and absence of reflux.) Complete control of symptoms and infection.

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A TEACHING SEMINAR

FROM THE

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE

Hypofibrinogenemia in Pregnancy

MOSE SMITH, III, M.D. AND

WILLIS E. BROWN, M.D.*

HISTORICAL BACKGROUND

Lowered fibrinogen levels occur in a variety of pathological circumstances. In the past decade the attention of Obstetricians has been focused on the clotting defects which result from hypofibrinogenemia complicating pregnancy. These clinical entities of decreased fibrinogen levels constitute a potential hazard to the pregnant woman. Precautionary procedures and the early recognition of the clinical manifestations by the Obstetrician will do much to safeguard maternal welfare.

Historically, the clinical entity is not new. It was first described in 1901 by De Lee who reported a bleeding syndrome in association with a case of abruptio placenta. He recognized it as a defect in the clotting mechanism, and described it as a "transient hemophilia", a very apt description.

Willson in 1922, described a clotting defect in association with abruptio placenta, and suggested it was caused by the maternal absorption of a placental toxin which he called "hemorrhagin."

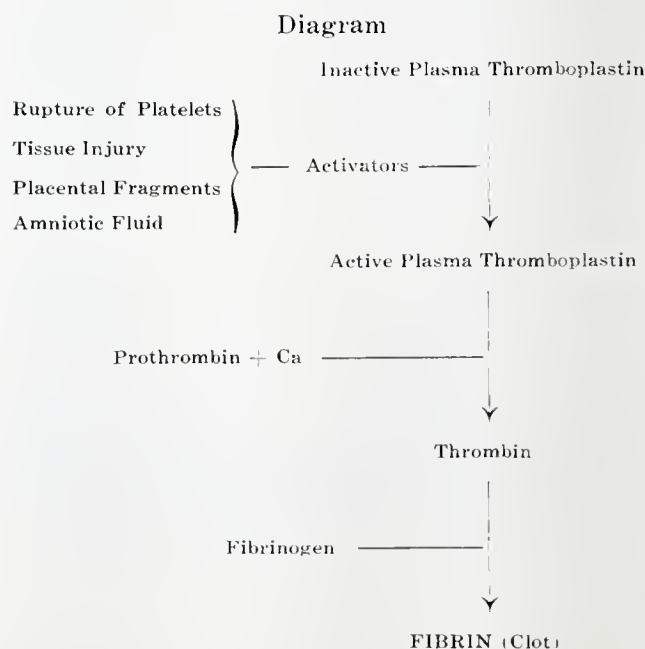
Dieckman in 1936, reported that plasma fibrinogen was markedly decreased in patients who exhibited the clotting defect associated with abruptio placenta. Molone in 1949, was the first to successfully treat hypofibrinogenemia with Cohn's Fraction I, which contained fibrinogen.

Since that time numerous authors have elaborated the scientific details and reported their experience with clotting defects in pregnancy associated with hypofibrinogenemia.

NORMAL BLOOD COAGULATION

It would seem appropriate, prior to a discussion of clotting defects, to briefly review the mechanism of normal clot formation as presently understood. A tremendous amount of laboratory and clinical information is available concerning the normal clotting mechanism, much of it conflicting and clinically meaningless. The several concepts have been further confused by the conflicting terminology of the numerous investigators working independently. Gradually there has evolved a reasonable unanimity of terms and concepts so that confusion concerning this area has been minimized.

Coagulation or clotting involves three major, identifiable, and sequential steps: (1) The activation of plasma thromboplastin; (2) The conversion of prothrombin to thrombin, and (3) The conversion of fibrinogen to fibrin as a clot. (See diagram).



From the Department of Obstetrics and Gynecology
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This process of coagulation can be initiated, modified, or inhibited by a number of factors. Several substances may serve as activators of plasma thromboplastin. Such activation may be brought about by the disruption of platelets, tissue injury, placental fragments, amniotic fluid, and other substances.

In the presence of adequate calcium, activated thromboplastin combines with prothrombin, and corrects the prothrombin to thrombin, which when combined with fibrinogen produces fibrin or clot. (See diagram). In normal states, all essential elements in their inactive or precursor forms are present in adequate quantities in the blood.

However, this process of clotting may be disturbed by pathological, clinical, or iatrogenic factors; such clinical factors as deficiency or depletion of calcium, prothrombin, and fibrinogen, or iatrogenically induced excesses of heparin, citrate, et cetera. In addition, there is suggestive evidence that certain anticoagulation substances occur naturally in the body; such as antithromboplastic substance which inhibits the activation of plasma thromboplastin, and there may be two antithrombins which inhibit the formation of thrombin from prothrombin such as natural heparin and albumin X. Though these substances occur normally, it is believed that they exist in such small quantities that they are of limited clinical significance. It appears possible that under certain as yet vague clinical conditions, these substances may be increased and adversely effect the clotting mechanism.

At the clinical level any one or several of the above described situations which interfere with clotting may exist without clinical bleeding. For pathological clinical bleeding to occur and continue, it requires not only interference with the clotting mechanism but also an open vessel. This is illustrated in the therapeutic use of heparin in the management of certain cases of thrombophlebitis where clotting is deliberately prevented without pathologic bleeding; however, if injury occurs, the heparinized patient bleeds abnormally. A similar situation may occur in the gravida with amniotic fluid intravasa-

tion where fibrinogen is depleted, but no abnormal bleeding occurs until placental separation. In the normal patient a firmly contracted myometrium effectively controls bleeding from the placental site even in the presence of a defect in the clotting mechanism.

Thus, in clinical obstetrics abnormal bleeding involves not only a defect in clotting mechanism but also an abnormality of uterine contraction, and/or an injury of maternal soft tissue.

FIBRINOGEN DEPLETION IN PREGNANCY

Lowered fibrinogen levels have been found to occur in abruptio placenta, in amniotic fluid infusion, in missed abortion, and dead fetus syndrome, and occasionally in other obstetric complications.

The mechanism of defibrination is similar in all cases, *i.e.*, by the escape of significant amounts of thromboplastin activator from the placenta, decidua, or amniotic fluid into the maternal circulation, which initiates the clotting mechanism and progressively exhausts the available fibrinogen, producing defibrination.

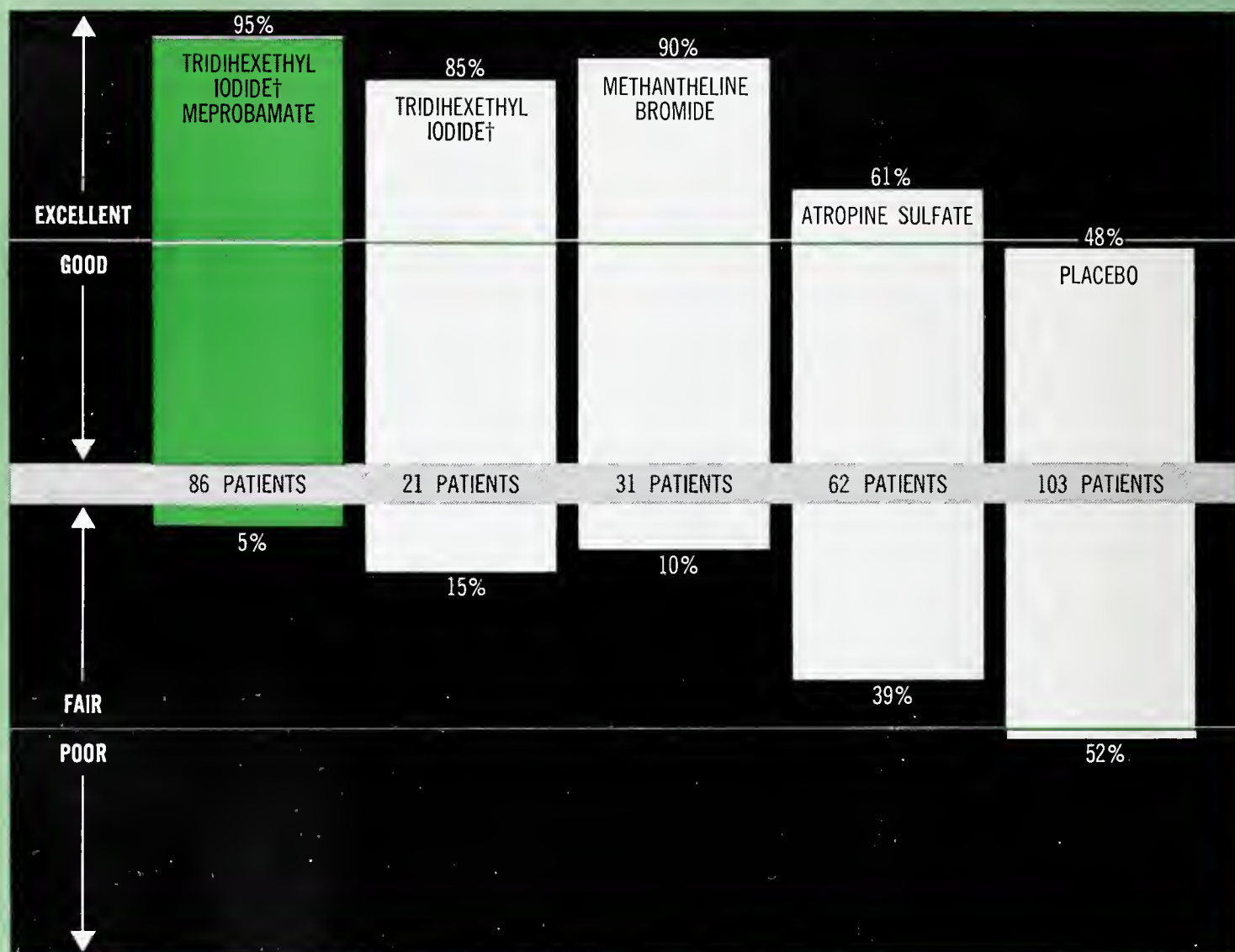
Hypofibrinogenemia may occur rapidly as in amniotic fluid infusion associated with tumultuous labors or abruptio placenta when large amounts of thromboplastin activator of the amniotic fluid are infused into the maternal system. The coagulation mechanism progresses with such rapidity that both embolism and fibrinogen depletion may occur with major clinical bleeding appearing on placental separation. Sudden death, as reported with amniotic fluid embolism, is usually caused by the rapid intravascular clotting within pulmonary system, with subsequent pulmonary edema and shock. The attendant shock causes myometrial relaxation and uncontrolled uterine bleeding and death.

Hypofibrinogenemia may also be associated with missed abortion and the dead fetus syndrome, where the slow infusion of necrotic placental and endometrial tissue into the maternal circulation results in a similar fibrinogen deficiency. Under these circumstances a less dramatic but more serious exhaustion of fibrinogen may occur.

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STOMATITIS	1%	0%	28%	14%	0%
VISUAL DISTURBANCES	0%	0%	50%	34%	1%
URINARY RETENTION	0%	0%	18%	11%	1%
DROWSINESS	20%	0%	0%	0%	0%
COMPLICATIONS OR SURGERY					
HEMORRHAGE	0%	9%	3%	9%	10%
PERFORATION	0%	0%	0%	6%	0%
OPERATION	0%	5%	5%	14%	2%
RECURRENCES					
NONE	28%	23%	25%	17%	26%
FEWER AND Milder	67%	62%	52%	37%	24%
SAME OR MORE	5%	15%	23%	46%	50%

*Atwater, J. S., and Carson, J. M.: Therapeutic Principles In Management of Peptic Ulcer. *Am. J. Digest. Dis.* 4:1055 (Dec.) 1959.
†PATHILON is now supplied as tridihexethyl chloride instead of the iodide, an advantage permitting wider use, since the latter could distort the results of certain thyroid function tests.

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HYPOFIBRINOGENEMIA IN PREGNANCY

in other situations, such as eclampsia by an, as yet, unexplained mechanism. Hypofibrinogenemia, hyperbilirubinemia, and occasionally hemoglobinemia and hemoglobinuria may appear. Pritchard postulates an obscure immunologic mechanism while Hodgkinson points out that violent exercise causes an increased amount of plasma thromboplastin which he relates to the convulsion of eclampsia. Hodgkinson further points out that prolonged surgical trauma will also decrease fibrinogen levels.

Occasionally other elements of the coagulation complex may be markedly decreased. Instances of decreases in calcium, prothrombin, and activator factors have been reported, so that occasionally fresh whole blood may be initially important in restoring the clotting mechanism in these patients.

CLINICAL MATERIAL

A review has been made of all cases of missed abortions treated at the University of Arkansas Medical center since 1940. There were a total of 27 patients with this clinical entity. While fibrinogen determinations were not made in the 4th decade, no maternal deaths occurred. In the 5th decade clotting proficiency was ascertained routinely, and no coagulation abnormality was detected.

While hypofibrinogenemia doubtless occurs with missed abortion, this experience leads us to believe that the clinical hazard of hypofibrinogenemia associated with missed abortion is more theoretical than practical.

In the 10 years from 1950 to 1959, there was a total of 22,350 deliveries and there have been 11 cases of clinical hypofibrinogenemia on the Obstetrical Service, the first case being recorded in 1954. The clinical data of these patients is recorded in Table I. It is of interest that 4 were grand multipara, (para 8+). All patients had significant bleeding of the third trimester. Nine patients were delivered at the Medical Center and 2 were referred with postpartum hemorrhage. One patient had a placenta previa and 10 had placental abruption. The degree of abruption was recorded in 5 instances and

ranged from one-fourth to total placental separation.

An estimate of the blood loss was recorded in 5 patients and ranged from 500 cc. to 2000 cc., while in the others it was recorded as "excessive" and/or "massive." Blood transfusions were given to 10 of the 11 patients and ranged from 1000 cc. to 5000 cc. The single patient who did not receive transfusions achieved adequate hemostasis and clotting with oxytocins and fibrinogen.

All patients had an assay of their clotting mechanism, 7 by serial clot observation tests and 7 by fibrindex, (3 having both), with the clotting defect being clearly established and described in all cases. Only one fibrinogen determination was made and this was recorded as 69 mg %.

Ten of the 11 patients were given fibrinogen ranging from one to 4.7 grams, with an average of 2.0 grams. One patient did not receive fibrinogen as none

Table

A) Parity	
Primipara	1
Multipara	10
Range	2 -17
Average	7
B) Period of Gestation	
Range	34-40
Average	38
C) Age of Patients	
Range	17-42
Average	24
D) Diagnoses:	
Placenta Previa	1
Abruptio Placenta	10
% Abruptio	
Not Recorded	5
Recorded	5
Range	25%-100%
E) Amount of Blood Loss:	
Recorded in 6 patients	
Range 500 cc-2000 cc	
Not recorded in 5 patients,	
but described as "massive" in all 5.	
F) Amount of Blood Given:	
None	1
1000-2000	5
2000-5000	4
5000	1
G) Fetal Survival	
Survived	1
Stillborn	10
H) Amount of Fibrinogen Given:	
Range (in grams)	1-4.7
Average	2

was available, but she was given thrombin and fresh whole blood.

There was 1 maternal death in the 11 patients. This patient was admitted with massive bleeding from placenta previa with a dead body, in shock, and with 4 grams of hemoglobin. She was delivered vaginally and received 5 liters of blood and 2 grams of fibrinogen. Although the clotting mechanism and hemostasis was re-established, she had sustained irreversible renal damage and died on the 15th postpartum day in azotemia.

The only known case of hepatitis in this series appeared 1 year after fibrinogen and blood administration for abruptio placenta with defibrination. Four months postpartum the patient underwent hysterectomy and received an additional 500 cc. of blood. Eight months following surgery (1 year postpartum) she developed typical viral hepatitis from which she recovered without incident. It is difficult to incriminate the fibrinogen in this case of hepatitis.

This review of our experience with clotting defects in pregnancy has revealed both the seriousness of this complication and delineated certain practical aspects of clinical management.

A brief review of the literature reveals very few clinical series for comparison (7, 11, 17, 25, 28, 32). At the Mt. Sinai Hospital, Cleveland, the first case was reported in 1954 and subsequently they had an incident of 1:1000. In Nassau County, New York, there were 10 cases in 31,488 patients or an incident of 1:3148. At the University of Arkansas Medical Center there were 11 cases in 22,354 patients or an incidence of approximately 1:2000. Although the 1 maternal death in this series was not directly attributable to the clotting defect, it undoubtedly played a significant role.

CLINICAL MANAGEMENT

Our experience has confirmed that of others (11, 26, 27, 28, 32), *i.e.*, that there are certain clinical conditions with an increased incidence of hypofibrinogenemia, such as abruptio placenta, amniotic fluid embolism, missed abortion, dead fetus syndrome, eclampsia, etc., that should alert us to this possibility.

When these obstetrical entities arise of prime importance is the prompt determination of the status of the maternal coagulation mechanism and its frequent re-assay. This can be easily accomplished at the bedside by utilizing the Clot Observation Test or the Fibrindex, or in the laboratory by actual plasma fibrinogen determinations. The clot observation test is the simplest to perform, and is indeed most useful. Blood is drawn into a clean dry test tube and observed for clot formation, clot retraction, and clot integrity. This test should be repeated at frequent intervals to determine any change in the clotting status. Fibrindex is also a useful bedside measurement of fibrinogen concentration. It is accomplished by adding thromboplastin to a blood specimen and measuring the time required for clotting. By special laboratory tests the quantity of plasma fibrinogen can be determined directly in mgm. per cent.

With these easily performed bedside tests, the clinical estimate of decreased fibrinogen is seldom a problem.

Occasionally other factors of clotting, such as deficiency of prothrombin, calcium or thromboplastin activators may be so decreased, that whole blood transfusion may be required.

Secondly, when hypofibrinogenemia is eminent or established, it is of paramount importance to eliminate the source of the thromboplastin activator from the decidua, placenta, or amniotic fluid. This is accomplished by emptying the uterus and closing the maternal sinuses, usually by rupturing membranes and inducing uterine contractions by pitocin.

Thirdly, the replacement of fibrinogen is most important and must be accomplished as soon as possible. The initial amount of fibrinogen usually required is 2 grams, with additional amounts added as required. Fresh whole blood is of tremendous value when fibrinogen is not readily available. The adequacy of fibrinogen replacement is determined by the restoration of the coagulation mechanism, and the appearance of a normal clot.

The situation in missed abortion or the dead fetus syndrome is similar to that in placental abruption except with regard to

the rate of development and degree of fibrinogen deficiency. While the uterus need not be evacuated immediately on fetal death (since spontaneous emptying usually occurs) it is imperative that frequent fibrinogen levels be determined so that falling levels may be identified and corrected prior to emptying the uterus.

The recovery of blood fibrinogen levels following the termination of the obstetric problem is variable. When the defibrination has been sudden as with placental abruption or amniotic fluid infusion, the clinical picture is dramatic but the degree of fibrinogen depletion is less marked so that rapid recovery usually occurs.

However, in the slower forms of defibrination seen with missed abortion and dead fetus syndrome, the fibrinogen exhaustion is maximal and recovery is prolonged often requiring several weeks.

The administration of fibrinogen is not without hazard for there is unequivocal evidence that the virus of serum hepatitis is contained in the fibrinogen fraction. Many authors report cases of hepatitis following fibrinogen administration, with several maternal deaths. Thus its use, though life-saving when required, is not without considerable hazard and it should not be used indiscriminately.

And finally, while emptying the uterus must eventually be accomplished, it is usually wise to defer this until normal clotting mechanisms have been restored. When feasible, conservative vaginal delivery is to be preferred as it avoids incisional wounds with the added bleeding possibilities.

In patients in advanced pregnancy, especially when complicated by abruptio placenta, these goals of therapy are facilitated by draining the amniotic fluid through amniotomy and by closing maternal sinuses by oxytocins, while replacing the fibrinogen deficiency.

Under reasonably favorable circumstances, with alert clinical observation, proper advanced preparation, and astute clinical judgment, maternal mortality should not occur.

SUMMARY

1. The normal coagulation mechanism has been briefly reviewed.

2. The mechanisms of defibrination and clotting defects that occur in association with abruptio placenta, amniotic fluid infusion, missed abortion and the dead fetus syndrome are described.

3. The management of these obstetrical complications with particular reference to hypofibrinogenemia is discussed.

4. The 11 cases of hypofibrinogenemia in pregnancy at the University of Arkansas Medical Center have been reviewed with regard to their diagnoses and treatment.

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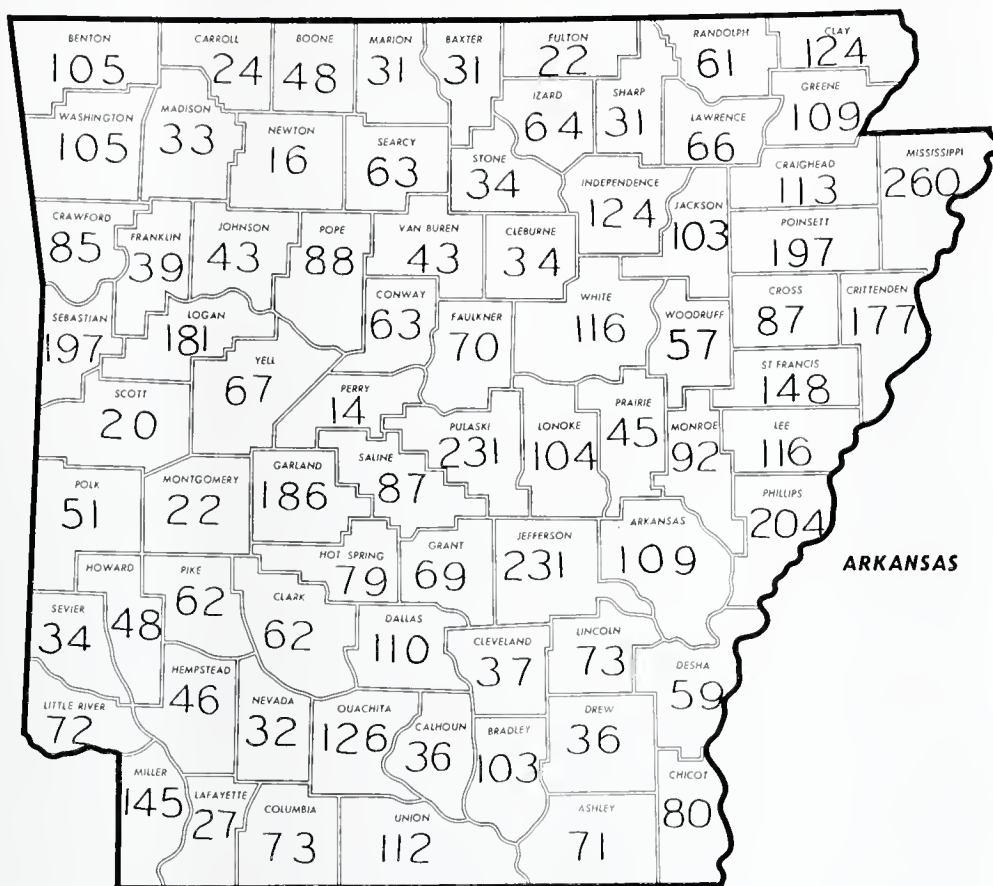
What Is Your Diagnosis?



FOR ANSWER SEE PAGE 262

Arkansas Public Health at a Glance

TUBERCULOSIS CASES 1-1-60



STATE BOARD OF HEALTH

LITTLE ROCK - 377
 NO LITTLE ROCK - 191
 STATE HOSPITAL - 223

TOTAL - 7154

The present trend in discussing many of our communicable diseases is to talk in terms of eradication. The prospect of attaining this wonderful goal is certainly encouraging in a number of instances. However, for us in Arkansas the situation in tuberculosis is still one of a great fight just to control the disease. In this State last year, there were 7,154 known cases of tuberculosis in all its forms. This represents a decrease of 605 cases under the previous year, but our 1959 prevalence rate is still 374.65 per 100,000 population.

There were 174 Arkansans who died from tuberculosis in 1959. This represents a ranking of the third highest death rate in the nation from this disease. There were 832 newly reported cases of pulmonary tuberculosis in Arkansas last year, and 47 reported cases of non-pulmonary tuberculosis in the same period.

The accompanying chart illustrates the location by county of the known cases of all forms of tuberculosis on January 1, 1960.

Editorial

Synovial Biopsy in Rheumatic Diseases

ALFRED KAHN, JR., M.D.

The histologic study of some of the mild widespread diseases often lags behind the more serious, less common ones. This is partially attributable to the decreased opportunity to get autopsy material in the milder diseases, and the fear of biopsy in the mildly ill patient. One of the commonest diseases is rheumatism, yet histological aids are seldom used in research, diagnosis and treatment of it; actually, in clinical medicine if lesser procedures can supply the requisite information biopsy should be avoided.

Rodnan, Yunes and Totten have recently reviewed their experience with 142 punch biopsies of synovium (*Ann. Int. Med.* Vol. 53, page 319 August, 1960). Their specimens were obtained from the suprapatellar bursa, and if this was not distended prior to biopsy it was distended with normal saline. Specimens were taken from three sites. The biopsies were compared to autopsy material and after suitable study, they were divided into the following categories: no disease; non-specific synovitis characterized by lymphocytic infiltration; questionable rheumatoid arthritis characterized by focal accumulations of lymphocytes, a few plasma cells, and fibrinous material; rheumatoid arthritis characterized by more marked changes with lymphoid nodules, edema and deposits of fibrin; and specific synovitis as seen in gout scleroderma and neuropathies. The results of Rodman et al studies showed that in rheumatoid arthritis the changes were not completely specific for rheumatoid disease but the biopsies did correlate well in showing activity. The changes found in lupus erythematosus were either non-specific or resembled rheumatoid arthritis. In progressive systemic sclerosis, the findings were either normal or distinctive with atrophic synovial lining cells, hyalinyation of stroma

and decreased numbers of capillaries. Gouty patients disclosed urate crystals in the biopsy in roughly one-third of the cases. It is of interest that biopsies from rheumatic fever cases showed virtually no inflammation and that psoriatic arthritis looked histologically like rheumatoid arthritis.

Mikkelsen, Duff, Castor, Zevely and French (*Arch. Int. Med.* Vol. 102, p. 977, Dec., 1958), performed 190 punch biopsies on the knees of their patients. Their findings agreed fairly well with Rodman's group. They biopsied some cases of osteoarthritis also; this group showed either no, or minimal synovial changes and the synovial fluid showed less than 400 cells per cubic millimeter, a good clot, and high viscosity. Mikkelsen, et al felt that the combination of hyperplastic synovial internal cells, subintimal inflammatory cell infiltration of lymphocytes and plasma cells, and increased vascularity with edema suggest rheumatoid arthritis. They felt that biopsy was helpful in the early recognition of infectious arthritis. In their cases of gout, one-third showed urate deposits in the biopsies. Lime salt deposits were found in neurotrophic joint disease.

Good illustrations of joint biopsies can be found in the article by Zevely, French, Mikkelsen and Duff in the *Am. Journal of Medicine*, Vol. 20, p. 510, April, 1956.

In the performance of biopsies one has to weigh the value of the information obtained against the possible damage of complications. Actually, complications appear to be rare; one group reported a hemarthrosis in a patient with multiple myeloma; the incidence of complication was under 1%. Another group reported transient hemarthrosis and superficial thrombophlebitis — a roughly 2% incidence in their series. One other aspect

of taking biopsies with a needle is that one may not get a representative biopsy showing disease, or one may not succeed in obtaining tissue at all; this apparently happens in a small number of cases and the figure 5% failure is given by one author. Patients are usually permitted to be up and walking within 24 hours after a biopsy.

Treatment is no better than diagnosis. In most instances of rheumatic disorders a good history, a careful physical examination and a few selected laboratory tests will enable a diagnosis to be made. If this fails, a synovial biopsy is justified provided the patient's illness seems serious enough to warrant it.

RESOLUTION

BE IT RESOLVED that the members of the Garland County Hot Springs Medical Society express themselves on the recent loss of Dr. Homer K. Wright.

Dr. Wright was an esteemed member of our Society for many years. He was both able and kind and will long be remembered by all of us.

As a mark of respect and in appreciation of his accomplishments as a physician this Society has made a contribution to the Cancer Fund in his name.

BE IT FURTHER RESOLVED that a copy of this resolution be sent to his wife, a copy be furnished to the press, and also to the Secretary of the State Medical Society.

BE IT FURTHER RESOLVED that a copy of this resolution be inserted into the Hot Springs Garland County Medical Society records.

D. B. Stough, M.D.

H. King Wade Sr., M.D.

E. K. Clardy, MD.

*It's your professional privilege
to replenish your ranks . . .*

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medical education
through AMEF**



**American Medical
Education Foundation**
535 N. Dearborn St., Chicago 10, Ill.

MEDICINE IN THE NEWS

The Month in Washington

(From Washington Office American Medical Association)

The federal government is offering states liberal matching funds to provide health care for needy and near-needy persons 65 years of age and older.

The program, which Congress approved in the bob-tailed post-convention session, is supported by the American Medical Association and allied health groups.

Congressional approval of the federal-state program marked a victory for the medical profession and a defeat for Democratic Presidential Nominee John F. Kennedy, the AFL-CIO and other advocates of the Social Security approach to the problem.

In a key vote on the issue, the Senate rejected by a 51-44 vote a Kennedy proposal that would have provided hospitalization and medical care for the aged under the Social Security system. The Kennedy plan would have required an increase in payroll taxes.

Republicans and Southern Democrats joined in the Senate to defeat the Social Security approach which was opposed vigorously by the medical profession.

After voting down the Kennedy plan and a separate proposal of the Eisenhower Administration, the Senate passed a modified version of a House-approved program. The modifications, sponsored by Sen. Robert S. Kerr (D., Okla.) and others, provided for increases in the per-

centage of federal matching funds and for administrative changes designed to facilitate state participation.

Under the legislation as signed into law by President Eisenhower, (1) substantial increases are authorized in federal grants to states to help with health care expenses of the 2.4 million persons on old age assistance rolls, and

(2) Federal matching funds are offered the states to finance a new program of health care for an estimated 10 million aged persons who are not on relief but whose incomes may be inadequate to take care of all their health costs.

Start of the program was authorized for Oct. 1 for those states where new state legislation is not required.

Administration of the program rests entirely with the states, subject to Federal approval in broad terms. It is up to each individual state whether it participates. Eligibility standards for beneficiaries and what health care services are provided are matters for the states to decide.

If a state so chooses, it can take care of all the health needs of an eligible beneficiary. The law authorized in patient hospital services; skilled nursing home services; physicians' services; outpatient or clinic services; home care services; private duty nursing services; physical therapy and related services; dental services; laboratory and x-ray services; prescribed drugs, eyeglasses, dentures and prosthetic devices; diagnostic screening and preventive services, and any other medical care or remedial care recognized under state law.

For medical expenses of persons on old age assistance rolls, the federal government will contribute 50 to 80 per cent—with states with low per capita income getting the larger percentages of federal aid—of an amount equal to \$12 multiplied by the number of old age assistance recipients in a particular state.

The matching formula will be the same for financing the health care of the needy but there is no \$12 limitation figure.

Health, Education and Welfare officials

estimated first-year costs of the program at \$262 million—\$202 million federal and \$60 million state. Annual costs are estimated to rise by the end of the fifth year to \$340 million federal and \$180 million state. However, these estimates admittedly are no more than educated guesstimates because so much depends upon state action.

It was estimated that maximum participation and a state contribution of \$7,000 would bring Arkansas \$3.3 million in federal matching funds in the first year of the program.

The medical-care-for-the-aged legislation was included in an omnibus measure titled Social Security Amendments of 1960. It also eliminated the age 50 requirement for eligibility for disability insurance benefits.

The Senate knocked out of the House bill a provision that would have brought physicians under Social Security coverage.

On other legislation of interest to the medical profession:

Congress passed bills authorizing expenditure of \$10 million of counterpart funds abroad to stimulate international research; authorizing up to 15 per cent of National Institutes of Health research grants for non-governmental medical research; directing a broad study of air pollution problems; requiring informative labeling on packages of hazardous substances for household use, and giving the government power to establish a tolerance on the amount of color additives that may be used in various products.

The Senate failed to act upon House-approved legislation that would have given physicians and other self-employed persons a tax break on income put into private pension plans.

A breakdown of estimated federal and state matching funds for the first year of the program, based upon maximum state participation. States get federal matching funds for present payments for vendor medical care, resulting in some states getting millions in return for putting up only a few thousands. The figures for all states follow:

FEATURES

	Federal Cost	Additional State Cost
Alabama	\$4.2 million	\$9,000
Alaska	53,000	53,000
Arizona	647,000	376,000
Arkansas	3.3 million	7,000
California	19.1 million	750,000
Colorado	4 million	314,000
Connecticut	4.4 million	3.3 million
Delaware	74,000	46,000
District of Columbia	121,000	75,000
Florida	3.7 million	199,000
Georgia	4.8 million	989,000
Hawaii	71,000	43,000
Idaho	707,000	17,000
Illinois	9.8 million	5.9 million
Indiana	3.6 million	3 million
Iowa	3.2 million	57,000
Kansas	3.5 million	678,000
Kentucky	2.8 million	576,000
Louisiana	13.1 million	48,000
Maine	887,000	83,000
Maryland	1.2 million	822,000
Massachusetts	10.4 million	4.8 million
Michigan	6.2 million	1.8 million
Minnesota	6.6 million	1.8 million
Mississippi	4.6 million	1.1 million
Missouri	4.8 million	152,000
Montana	216,000	184,000
Nebraska	1.7 million	545,000
Nevada	234,000	47,000
New Hampshire	1.3 million	620,000
New Jersey	6.2 million	4.9 million
New Mexico	886,000	4,000
New York	19.3 million	13.4 million
North Carolina	2 million	18,000
North Dakota	1 million	85,000
Ohio	7.8 million	1.3 million
Oklahoma	10 million	633,000
Oregon	2.8 million	1.6 million
Pennsylvania	6 million	2.5 million
Rhode Island	1.4 million	896,000
South Carolina	1.6 million	2,000
South Dakota	427,000	189,000
Tennessee	2 million	7,000
Texas	7 million	476,000
Utah	775,000	18,000
Vermont	249,000	22,000
Virginia	834,000	266,000
Washington	6 million	2.5 million
West Virginia	642,000	28,000
Wisconsin	5.8 million	2.5 million
Wyoming	291,000	52,000

Forand Bill Just One Battle

In a recent letter to Mr. Paul Schaefer, Executive Secretary, discussing the favorable outcome of the recent legislative struggle over Forand versus other types of health legislation, Dr. Blasingame, Executive Vice President of the American Medical Association, had this to say:

"We won an important battle in a long-continuing war. However, I believe that, properly implemented and administered, this legislation should go a long way in removing any justification for extension of government in the health care area.

Nevertheless, I am sure there will be advocates pressing for governmental extension through social security expansion. Our next task is to see that congressmen, knowledgeable in and friendly to our point of view, are retained and others are sent to the Congress.

"Those of us at headquarters were glad to be a part of this bill tussle; but we are mindful of the wonderful support and cooperation which we received all along the line. Surely, it is not necessary for me to mention that some of the most vigorous and dedicated support which our cause received was in Arkansas and through its representatives and senators in Washington."

Medical College Admission Test Data for 1959-60 Applicants

(From Association of American Medical Colleges)

Applicants to U. S. medical schools for 1959-60 increased in average Science Achievement scores from the low set by the 1957-58 group. Although scores on the Quantitative section were down slightly from the high achieved by 1958-59 applicants, the 1959-60 applicants were the first to surpass the 1951-52 standardization group in over-all MCAT performance.

Over this eight-year period, fluctuations in MCAT scores of accepted applicants have not been striking, indicating that admissions committees continue by and large to select the best of the applicants that come to them and have, therefore, been able to maintain the intellectual ability of their entering classes at a relatively high level.

Last month's datagram noted a decrease in applicant activity for the third consecutive year. Relating applicant activity to MCAT performance leads to the interesting observation that in those recent years when activity has been lowest the Science Achievement scores have been highest. While not as significant, the same holds true for scores on the Modern Society subtest. On the other hand, no consistent relationships are apparent between the degree of applicant activity and average Verbal and Quantitative Ability scores. Although these relationships are

undoubtedly the result of the interaction of a number of factors, one in particular warrants discussion. The most recent years in which Science Achievement averages were lowest coincided with the period during which the science faculties and facilities of the undergraduate colleges were probably being overburdened by the influx of Korean War veterans. Although the size of the undergraduate population has continued to increase, it is quite likely that the concern of the colleges for their science programs since Sputnik I has been responsible for the reversal of trend and the observed increase for the last two years in the average Science Achievement scores.

Does this mean that the medical schools will be better off quality-wise if applicant activity continues to decline? **Emphatically no.** The fact remains that any admissions committee faced with the problem of selecting quality students will be in a more favorable position to obtain the desired class if they have the opportunity to screen larger numbers of applicants. This will be especially true in years when, for whatever reasons, the over-all ability or achievement levels in the available applicant pool are lower.

Probably more important as a major problem facing U. S. medical schools in their bid for talent is the problem of insuring that those quality students who each year do express an interest in a career in medicine are not turned away due to problems of distribution among the schools. Every year schools in the more favorable selection position turn down high-ability applicants while other schools are forced to seat their first-year classes with at least some mediocre or poor students. What happens to these high-ability rejected applicants and the question of how to help them secure an opportunity for a career in medicine is currently a subject of study by the AAMC's Basic Research Division in conjunction with members of the Continuing Group on Student Affairs. The establishment of a pool of available applicants, set up on a voluntary basis, could do much to distribute among the various schools talent that would otherwise be lost.

Committee on Legislative Budget and Appropriations Hearing Proposed Tuberculosis Control Project

Doctor John T. Herron reviewed the proposed expanded state-wide tuberculosis control program to be presented to the 1961 General Assembly, before the committee on Legislative Budget and appropriations hearing on Sept. 22.

Dr. Herron quoted from the Arden House Conference on Tuberculosis held Nov. 29 through Dec. 2, 1959 at Harri-man, N. Y., under the sponsorship of the United States Public Health Service and the National Tuberculosis Association. The goal of these Tuberculosis experts is eradication of Tuberculosis. This obviously cannot be accomplished overnight in Arkansas, yet a significant improvement is to be expected if adequate funds are provided to assure greater utilization of the Mobile X-ray Units, to establish a skin-testing program, as well as to establish 10 new local chest clinics with the consent and cooperation of the local Medical Society. The Budget would permit the employment of 30 additional public health nurses to assist the local physicians in the operation of these Chest Clinics. The epidemiologic workup of the patient's associates would thus be speeded up and earlier treatment started by the Sanatoria or private physician which in many cases may then be supervised by the family physician at home with medicine administered by the Public Health Nurse when needed.

The fullest utilization of case finding, modern treatment and follow-up was pointed out by Dr. Herron to presuppose adequate financial support, estimated to be \$439,700. per year for the Arkansas State Board of Health. Another necessity which he repeatedly stated was the local community's desire to control tuberculosis of such a magnitude that they would interest qualified local physicians to staff local chest clinics.

Others attending the hearing and endorsing the proposed program by the Arkansas Tuberculosis Association were Mr. T. H. Lipscomb, Superintendent, Arkansas Tuberculosis Sanatorium, Booneville; Dr. G. N. Pierce; Dr. Albert S. Koe-

nig; Dr. Hugh A. Browne, Superintendent, McRae Memorial Sanatorium; Mrs. W. T. Dorough; Mr. Robert H. Schnee; Dr. Ben Saltzman; Dr. Elvin Shuffield; Dr. Richard Ebert; Dr. John T. Riffin, and Dr. Harley Darnall.

ANNOUNCEMENTS

A dramatic new film presentation on the Old-Age and Survivors Insurance disability program, entitled "The Disability Decision," is now available for showing to physicians and allied professional personnel.

This film was produced and released by the Bureau of Old-Age and Survivors Insurance with the cooperation of the American Medical Association, and it informs physicians of the types of medical data needed in the medical reports they are asked to furnish by patients who apply under the disability provisions of the law. The film distinguishes between the examining physician's responsibility to describe the "impairment" and the administrative agency's responsibility to make the decision as to "disability." It also shows how this avoids strain on the doctor-patient relationship, when doctor and patient understand that the doctor reports history and findings, and does not make the decision on his patient's disability.

Prints of the 16mm black and white 30-minute dramatic presentation are now available (return postage only) from the American Medical Association Film Library, social security district offices, and state agencies which, under Federal-State agreements, make disability decisions for BOASI.

Announcement has been made that the Southern Tuberculosis Conference and the Southern Thoracic Society, medical advisory section of the Conference, will hold a joint meeting with the Arkansas Tuberculosis Association in Hot Springs, September 6, 7, 8, 1961.

The Seventh Interim Scientific Session

of the American Rheumatism Association will be held all day Friday and Saturday morning, December 9 and 10, 1960 at the Sheraton-Dallas Hotel in Dallas, Texas. Current plans provide for a panel discussion on "Lupus Nephritis," with participation by a nationally known pathologist, electronmicroscopist and several clinicians.

A Post-Graduate course in General Pediatrics will be offered by the University of Arkansas, December 7-8, 1960, in cooperation with the Arkansas Medical Society, the Arkansas Academy of General Practice and the Arkansas Academy of Pediatrics.

The course will be presented by the full-time and part-time faculty of the Department of Pediatrics under the direction of Dr. Theodore C. Panos, Professor and Chairman. Guest participants will include Dr. Amos U. Christie and Dr. Edward L. Pratt. All practitioners are welcome.

Information regarding registration, lodging and meal accommodations may be obtained from the Office of Post-Graduate Medicine at the University of Arkansas Medical Center, Little Rock, Arkansas.

Obituary

Dr. Mark Anderson Shelton of Wabbaseka (Jefferson County) died on his 85th birthday, August 16, 1960. He received a gold certificate just before his death, from the American Medical Association for 50 years service to the medical profession. He is survived by three sons, Mark A. Jr., Carl and Robert Shelton of Wabbaseka; three daughters, Mrs. J. R. Downs of Wabbaseka, Mrs. William Probst of Little Rock and Mrs. Eugene Tillman of Baton Rouge, La., and three brothers. Burial was at Graceland Cemetery at Pine Bluff.

Dr. Homer K. Wright, Hot Springs, died September 12 at Oschner's Clinic in New Orleans. He had resided in Hot

Springs for 38 years. He obtained his medical degree from Tulane University School of Medicine. He was a member of the Garland County-Hot Springs Medical Society, the Arkansas Medical Society, American Medical Association, Southwest Surgical Society, Central Baptist Church and the Kiwanis Club. Survivors include his widow, Mrs. Carrie Davis Wright, two brothers and two sisters.

PERSONAL AND NEWS ITEMS

Dr. Charles A. Spears, a graduate of Harrison High School and the University of Arkansas School of Medicine, has opened his office for the practice of medicine in Harrison, Arkansas. Dr. Spears interned at Mound Park Hospital, St. Petersburg, Florida, and took additional training in surgery and obstetrics at Conway Memorial Hospital, Monroe, Louisiana.

Dr. I. H. Jewell, head of the Jewell Infirmary of Paris, Arkansas, has recently celebrated his golden anniversary with the Arkansas Medical Society. He has spent all of these years in Paris, having moved there at the age of two with his parents.

Dr. William Joe James has recently opened his office for the practice of Urology in Pine Bluff. He is a graduate of the University of Arkansas School of Medicine and served his internship at Kansas City General Hospital No. 1 in Kansas City, Missouri. He served one year of residency in general surgery at the University Medical Center, Little Rock, and three years of residency in the Tulane Department of Urology at Charity Hospital of Louisiana in New Orleans.

Dr. Calvin Austin has opened his office in Mena after completing two years with the Air Force. During this time he attended a flight surgeon school at Randolph AFB, Texas, and then spent

thirteen months in Korea with the Seventh Division as a flight surgeon.

Dr. James M. Kolb, past president of the Arkansas Medical Society, has been appointed by Gov. Orval Faubus to serve as a member of the Governor's Commission on Aging.

Dr. Jerry Bensberg, assistant director of the mental health program in Arkansas, speaking to the Kiwanis Club in Conway in August, said that clinics should be available for each 100,000 population, but now only three are set up in Arkansas.

Dr. Joseph M. Parker, Paragould psychiatrist and neurologist, has been named a Clinical Research Consultant for the Upjohn Pharmaceutical Company of Kalamazoo, Michigan, and has received a research grant from the company. The research grant is for the study of nerve cell metabolism in the mental health fields and is for a period of five years.

Booneville, Arkansas has recently honored the memory of **Dr. Austin Ross Hederick** by naming the new elementary school for him. This is the first time a Booneville school has been designated by the name of a particular individual. Dr. Hederick had lived at Booneville since 1902, and for forty years had been active and interested in the public schools, serving on the school board for many years. In making the dedication of the building, Mr. Charles I. Evans, school board member and long-time friend of the late doctor, reviewed the story of Dr. Hederick's interest in the children of Booneville.

Dr. Thomas E. Burgess of Little Rock, who recently celebrated his 81st birthday, is still active in the practice of medicine, and says his retirement is something to think about in the distant future.

Dr. Cecil H. Dickerson, formerly of Conway, has opened his office in Jacksonville, Arkansas.

Dr. A. F. Isele joined the staff at the Piggott Hospital in September. He is a

graduate of the University of Tennessee Medical School, and served his internship at the John Gaston Hospital in Memphis prior to moving to Piggott.

Dr. George D. Pollock, formerly of Gillette, Arkansas, is now associated with **Dr. Frank Rhodes** in Osceola. Dr. Pollock was graduated from the University of Arkansas Medical School and served two years in the U. S. Navy after which he practiced medicine in Gillette for two years.

Dr. John W. Vinzant, a surgeon, has opened his offices in Fayetteville and has as his partner a former classmate, **Dr. Rodney Baker**, who is a general practitioner.

Among those from Arkansas attending the Southern TB Conference in Charleston, South Carolina were **Dr. G. N. Pierce**, Medical Director of the State TB Sanatorium; **Dr. A. Petrikas**, Sanatorium Staff Physician; **Dr. Ben N. Saltzman**, President of the Arkansas Tuberculosis Association; **Robert H. Schnee**, Executive Director of ATA; as well as **Jim Giltmier**, **Miles Donoho**, and **Paul Harris** of the TB Association field staff. Also on hand were: **Miss Martha Allis** and **Mrs. Ann Savage** of the Pulaski County Tuberculosis Association, and **Mrs. Peggy McWilliams**, Executive Secretary of the Garland County TB Association.

Proceedings of Societies

The Union County Medical Society was host to the sixth annual seminar on trauma at the Petroleum Club on August 14. The subject for the seminar was "Automobile Injuries," and was presented by the Department of Surgery, University of Arkansas School of Medicine, Little Rock. Guest speakers were Dr. Dana M. Street, professor of orthopedic surgery; Dr. Mas Hara, professor of surgery; Dr. C. Robert Watson, clinical professor of neurosurgery; Dr. William W. Christeson, Dr. John M. Hundley and Dr. Kenneth G.

Jones, assistant clinical professors of orthopedic surgery; Dr. William M. Steele, Dr. Walter Selakovich, Dr. C. B. Powell, clinical instructors in surgery.

The Cross County Medical Society has appropriated funds to start a program of low-cost polio vaccination through the Cross County Health Department. Through this program, the Health Department will provide polio shots at only \$1 each for those who are not able to pay the full price. The fee will be used to purchase additional vaccine and will enable the program to continue.

Woman's Auxiliary

Three members of the Woman's Auxiliary to the Arkansas Medical Society have undertaken the task of publishing a quarterly news letter for the Auxiliary known as the ARK-MAP. Editor of the publication is Mrs. James Newbill, 3900 N. Lookout, and co-editors are Mrs. Hoyt Choate, 1100 Kavanaugh and Mrs. J. W. Downs, 32 Wingate Drive, all of Little Rock. The first issue was published for September, 1960.

The AMA Regional Political Action Conference

By: Mrs. C. C. Long, Ozark, President, Woman's Auxiliary to the Arkansas Medical Society.

In mid-August your President attended the Regional Political Action Conference sponsored by the AMA Council on Legislative matters at French Lick, Indiana. Once again, she was forcefully reminded that physicians who, in a large measure are inclined to put themselves in a cell, think themselves above participation in political affairs, failing to donate to their political parties or to support civic affairs always giving the excuse "I have to go to the hospital" must, at last display a sincere interest in their communities and in politics. This also applies to doctor's wives.

Joseph J. Eley, President of Public Affairs Counsellors, Inc., conducted Applied Citizenship Training Program. We reacted to some of the truths he spoke as if those truths might have been physical blows.

Mr. Eley spoke often of the importance of the "image of the candidate." Build a good image of the candidate for the people, said he, and the people vote for that image.

Unfortunately un-beautiful images are sometimes created by those in power and the unattractive image of the nation's doctors as "a whiskey-drinking, golf-playing, Cadillac-driving no-gooders group of selfish grasping individuals, has been created by these who oppose certain stands taken by the AMA."

Speaking of the favorable image which can be created for a candidate, Mr. Eley spoke of the influence of a candidate's wife creating the image saying "the typical gingham-girl, preferably expecting an heir" is the ideal from a vote-winning standpoint.

Your President was weeping inside for these wonderful men, our doctors, and remembering the reference to the successful gingham girl, the question was asked from the floor "Is the doctor's wife a part of the base image created of the nation's doctors?"

Mr. Eley said no "But" he said, it can be a great task for the doctor's wives to remake the image, making it once again the ideal image of the family doctor.

The wistful thought occurs that, perhaps, along with this image re-making must come the reconstruction of the family unit as the basic element of our society. But this was not touched in the conference.

It was pointed out time and again the importance of selecting your party and to start actively supporting and working for it on the precinct level. We must work with other citizens first then they will be more willing to help us.

Book Reviews

GENERAL DIAGNOSIS AND THERAPY OF SKIN DISEASES. Hermann Werner Siemens. The University of Chicago Press, Chicago, Ill. PP. 324. January, 1958. \$10.00.

This good textbook of dermatology is not distinguished in any notable sense from the better American textbooks. It was written by Dr. Siemens of Leiden, Holland, and translated by Dr. Kurt Wiener. The book uses a descriptive approach to dermatology. There is some correlation between the morphology and the gross lesion but this is not stressed to any notable degree. The physiological approach is minimized; the reviewer would like to see more of this. The illustrations are excellent and the book is well written.

DISEASES OF THE NEWBORN by Alexander J. Schaffer, M.D., Associate Professor of Pediatrics, The Johns Hopkins Medical School, and Pediatrician to The Johns Hopkins Hospital; Formerly Pediatrician-in-Chief, at present Attending Pediatrician to The Sinai Hospital of Baltimore, Maryland; Chief of Pediatrics (Nursery Service), The Hospital for the Women of Maryland. With a Section on Neonatal Cardiology by Milton Markowitz, M.D., Assistant Professor of Pediatrics, The Johns Hopkins Medical School, and Pediatrician to The Johns Hopkins Hospital; Attending Pediatrician and Director of the Division of Pediatric Cardiology, The Sinai Hospital of Baltimore, Maryland. pp. 878, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1960.

This book is well written and illustrated. It has excellent references. Its authors are authorities in their field. This book covers a limited field, namely that of the newborn. As such, it will interest the pediatricians and those practicing pediatric surgery. The general physician will find this book interesting as a reference. The organization of the book is good. Its style is readable. This book is heartily recommended to the pediatrician, the pediatric surgeon, and the general physician.

BAILLIERE'S POCKET BOOK OF WARD INFORMATION. Revised by Marjorie Houghton, M.B.E. The Williams & Wilkins Company. Baltimore 2, Maryland. PP. 216. \$2.50.

The reviewer sees no justification for this small book. It is neither large enough to contain an adequate amount of information nor small enough to be really useful. The book contains a section on weights and measures. It contains some information on therapy. There is a section on the treatment of poison. All in all, although this book is adequately prepared, it is not recommended because it does not seem to fulfill a useful purpose.

—AKJ

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

The Danish Tuberculosis Index

An intensive study of the epidemiology of tuberculosis was undertaken in Denmark by the National Health Service of Denmark and the World Health Organization. A follow-up four years after a mass campaign of tuberculin testing, X-ray, and BCG vaccination showed that all persons with suspicious X-ray lesions and young people with large tuberculin reactions should be followed systematically; others could be ignored.

Tuberculosis eradication programs of the future must depend heavily on the establishment of risk rates in various definable population groups. It is only through a concentration of all resources for screening and supervision of those people most likely to develop tuberculosis that waste motion can be avoided and rapid progress made.

Giant steps in this direction have already been taken in Denmark by means of a mass screening campaign, followed by four years of careful observation. The report of this experience which appeared under the title, "Epidemiological Basis of Tuberculosis Eradication in Denmark," in the *Bulletin of the World Health Organization*, Vol. 21, No. 1, 1959, is of immediate practical importance to everyone involved in tuberculosis control. The authors were E. Groth-Petersen, Jorgen Knudsen, and Erik Wilbek. The whole study was carried out under an administrative organization called the Danish Tuberculosis Index. It was done as a cooperative undertaking of the National Health Service of Denmark and the WHO Tuberculosis Research Office.

COUNTRY-WIDE STUDY BEGUN

During the period from February, 1950 to December, 1952, tuberculin testing, X-raying, and BCG vaccinating teams cov-

ered the entire country with the exception of Copenhagen, the island of Bornholm and a few small communities where campaigns had been carried out previously. The only population group not included was school children aged 7-14 years who were being tuberculin tested and vaccinated in the schools. Over one million persons were examined. A sputum specimen or a gastric lavage was obtained whenever there were suspicious findings on the X-ray.

Among the 795,000 adults examined in the mass campaign, 503 previously unknown cases of active pulmonary tuberculosis were found — a rate of one case per 1,500 examined. Expressed as age specific rates per 100,000 population, there was a range from 36 in men aged 15-24 to 94 in women aged 25-34. The report provides the greatest detail on the cases found during the initial campaign, but the findings in the four-year period of follow-up are striking, indeed, and furnish valuable documentation on risk rates not previously available for any population group in the world.

FOUR YEAR FOLLOW-UP

Among the 744,261 individuals judged healthy, so far as tuberculosis is concerned, at the start of the follow-up period, 878 new cases of tuberculosis developed, 742 of which were pulmonary. This is an average annual incidence of 25 per 100,000. Although the rates were somewhat higher for women and for the age group 15-34, the differences are too small to be of much use in defining risk groups. It is only when tuberculin test and X-ray results are considered together that big differences in risk rates become evident.

In a group of 320,000 unvaccinated tuberculin reactors, the average annual case rates per 100,000 in the age group 15-24, according to size of tuberculin reaction, were as follows: 6-11 millimeters, 24.5; 12-17 mm., 56.4; 18-23 mm., 87.8; and 24+ mm., 72.6. In older persons, the differences by size of reaction were less striking.

X-ray findings at the start of the follow-up period were classified as normal (90 per cent), healed lesions (7 per cent), and suspicious (3 per cent). The corresponding new average annual case rates were 27, 51 and 370, respectively, for all ages.

F. M. FELDMANN, M.D., *National Tuberculosis Bulletin No. 8, Vol. 46, September, 1960*

However, the rate was 1,022 for those in the age group 15-24 who had suspicious shadows. The highest case rate—roughly 2,000 per 100,000 persons per year—was in a subgroup of 1,200 persons whose roentgenographic findings were interpreted as definite lesions, probably of tuberculosis origin.

Although the case rates in the vaccinated groups were low, 23 per cent of the new cases arose among them. Since there was no unvaccinated control group selected at random, the effect of vaccination could not be measured.

CONCLUSIONS

The report concludes: "Certainly the enormous numbers of routine repetitive X-ray examinations of adults can be drastically reduced and the case-finding nevertheless intensified. Persons in the older age-groups with normal findings on a single photofluorogram, even though they have positive tuberculin reactions, need not be called back for examination year after year. They can be left in peace. But persons of any age with suspicious X-ray lesions and young people with large tuberculin reactions should be followed systematically. These high-risk groups comprise such a small percentage of the total population that continuous and close supervision is both practicable and profitable."

Answer to What Is Your Diagnosis?

41 year old white male with leakage from the lower abdominal wall all of his life and frequent urinary tract infections. A carcinoma of the skin developed following the repair of the abnormality.

ANSWER — Congenital exstrophy of the bladder.

X-RAY FEATURES — There is wide separation of the pubic bones and no normal bladder outline.

Therapy

The CHEMOTHERAPY of TUBERCULOSIS

The place of chemotherapy in the management of tuberculosis has become well established, and no form of the disease is treated effectively today without the use of antimicrobials. The advent of chemotherapy has profoundly changed the prognosis for tuberculosis, not only because it has improved medical treatment but also because it has made possible surgery that could not be risked without the coverage afforded by antimicrobials. It has been demonstrated that 90 per cent or more of recent cases of tuberculosis can be cured with the presently available treatment and that moderately advanced, and even far advanced, tuberculosis has a better prognosis than ever before.

Chemotherapy has been effective, too, in preventing serious complications and in reducing the number of relapses. Although it has simplified treatment in some respects, laboratory tests must be made frequently and special problems do arise. Thus, any competent physician can undertake the supervision of a patient with tuberculosis, but it is essential that he have available to him a laboratory equipped to grow cultures for the determination of the organisms' susceptibility or resistance to the drugs he plans to use and it is also important that specialists be called upon for consultation when needed, especially on beginning treatment. Initial decisions are the most important in determining the success of treatment.

As soon as the diagnosis of tuberculo-

*Reprint from Booklet

AMERICAN THORACIC SOCIETY
MEDICAL SECTION OF THE
NATIONAL TUBERCULOSIS ASSOCIATION

sis is confirmed, the case should be reported to the health department.

Since the three major drugs were introduced between 1944 and 1952, sufficient time has elapsed for the basic principles of their use in the treatment of all kinds of tuberculosis to be established. These drugs, in order of their introductions, are streptomycin, para-aminosalicylic acid (PAS), and isoniazid. Other antimicrobials, useful in certain situations, have also been reported — but none of these has equaled the three named for efficacy and safety. Isoniazid is the best drug of the three.

BASIC PRINCIPLES

There are three basic principles for the use of antimicrobials in treating tuberculosis. These are:

1. *Combined chemotherapy* — the concomitant use of two or more drugs to delay, or to prevent entirely, the emergence of bacterial resistance to any of the drugs used.
2. *Continuous administration* — administration of the drugs without a break of more than one or two weeks. This is both a safeguard against relapse and an aid in preventing bacterial resistance.
3. *Prolonged administration* — administration for at least a year, usually longer, to prevent relapse.

COMBINATIONS USED

Several combinations of antimicrobials have been used with minor differences in over-all effectiveness, but those including isoniazid are demonstrably most effective.

Isoniazid and PAS is the combination of first choice. Not only is this pair of drugs fully as effective as any other but it is also the most practicable for general use. Both isoniazid and PAS can be taken orally, thus eliminating the need for injections. The incidence of serious toxicity is low; however, PAS causes gastric irritation. The patient who is upset by the drug will need encouragement by the physician and his aides to persist in taking full doses of PAS.

Isoniazid and streptomycin is an effective combination, but its use is practicable only in the hospital as a rule. Streptomycin must be given by injection, and when isoniazid is the companion drug, the injections should be made daily to prevent the emergence of bacterial strains resistant to isoniazid. If this combination is used and bacterial resistance develops to both drugs, second-line medication may have to be used later. Thus, in most cases, it is wiser to begin treatment with isoniazid and PAS, holding streptomycin in reserve in case bacterial resistance develops to the other major drugs.

Isoniazid, streptomycin, and PAS used simultaneously may be justified for the first month or two in the treatment of unusually severe forms of the disease, such as pneumonic, meningeal, miliary, or genitourinary tuberculosis. Triple-drug therapy, however, adds nothing to the long-range effectiveness of chemotherapy. Moreover, it markedly increases the incidence of toxic manifestations if continued for a long period.

Isoniazid alone may be used when the tuberculous involvement is not severe, that is, when there is slight lymph-node, pleural, or pulmonary tuberculosis with negative sputum and no cavitation. It is also used to protect infants with primary tuberculosis from developing complications or to protect adults who may be infected, and are under steroid therapy for another condition, from breaking down with tuberculosis.

Secondary drugs, such as viomycin, pyrazinamide, cycloserine, kanamycin, or oxytetracycline (Terramycin®), are useful in various combinations in the treatment of patients who have failed to respond to one of the standard drug regimens. Except for the tetracyclines, which are very weak antituberculosis agents, these drugs are not suitable for use outside the hospital because of the toxicity they cause in various forms and degrees.

Dihydrostreptomycin should rarely be used because prolonged courses of therapy may produce irreversible nerve deaf-

ness. However, it may be substituted for streptomycin in certain patients with allergic reactions. Otherwise, its use is justified only in the form of streptodua-cin, a drug made up of equal parts of streptomycin and dihydrostreptomycin to reduce by half the toxicity of each drug. Audiometer tests should be performed regularly on patients receiving DHSM to detect the onset of deafness.

DOSAGE

All the drugs should be used in doses as low as are consistent with effectiveness. Extensive controlled studies have indicated the proper dosage in most instances.

Isoniazid. The dose is 300 milligrams daily for the average adult, or 4 to 5 milligrams per kilogram of body weight. Larger doses in proportion to body weight are well tolerated by infants and children. Isoniazid may be administered equally well in two or three daily doses. Although the subject of rapid acetylation of isoniazid in many individuals has been studied extensively and the question has been raised as to whether larger doses should be used for all patients to assure effectiveness in rapid metabolizers, isoniazid is so highly effective that clinical failure is seldom observed or correlated with the findings of bioassays of the active drug in the serum. However, higher dosage levels may be used for seriously ill patients in the hospital, but they must be accompanied by sufficient pyridoxine to prevent peripheral neuritis. (At least 10 milligrams of pyridoxine for each 100 milligrams of isoniazid is recommended.)

Streptomycin. The usual dose is one gram intramuscularly two or three times a week. If streptomycin is administered daily in the same dosage, either as a companion drug to isoniazid or to bring under control quickly the usually fatal forms of tuberculosis, a certain amount of damage to the vestibular function and, more rarely, some deafness may result.

PAS. The dose is generally 12 grams daily for adults or, if the sodium salt of PAS is used, 15 grams daily. The dose is divided into three equal parts that are taken *with the meals*. Sodium-PAS is the most widely used of the PAS prepa-

rations and, when taken in the prescribed fashion, can be tolerated by 95 per cent of patients despite some gastric and intestinal discomfort. If necessary, the dose may be reduced temporarily to keep the patient from refusing to take the drug. However, if the dose is reduced, there is some risk that resistance to the companion drug will emerge. Other preparations of PAS, somewhat more expensive, are on the market for patients who cannot tolerate either plain or sodium-PAS. One of these should be employed for patients with heart or kidney disease, which contraindicates an intake of sodium.

TOXICITY

The physician and the nurse should watch regularly for toxic manifestations. When these occur, the drugs the patient is taking should be stopped promptly.

With isoniazid, numbness, tingling, pains, or weakness in the extremities may signal the onset of peripheral neuritis.

Tinnitus, vertigo, or unsteadiness of gait indicates ototoxicity due to streptomycin. Deafness to the high tones should also be watched for. Sometimes the drug has to be abandoned because of headaches after each injection.

PAS causes gastric irritation in practically all patients. If the patient has severe gastrointestinal symptoms, including diarrhea, it may be impossible to continue this valuable drug. Although antacids such as aluminum silicate may relieve gastric distress, they should not be used because they inactivate PAS. Allergic skin rashes of various forms are usually due to either streptomycin or PAS and may be intractable.

All these toxic manifestations are more apt to occur in older than in young patients and are more numerous as the medication is continued over several years.

After all medication has been stopped to permit a reaction to clear, a small dose of the drug suspected of causing the condition may be tried cautiously. If the offending drug has been identified, a shift may be made to a combination without it.

Desensitization or steroid management of severe reactions should be attempted only in the hospital.

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ends of the vagus

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The consistent relief of emotional tensions afforded by Dartal makes this well-tolerated tranquilizer a rational choice to support the antispasmodic action of Pro-Banthine in emotionally influenced smooth-muscle spasm.

These two reliable agents combined as Pro-Banthine with Dartal consistently control both disturbed mood and disordered motility when emotional disturbances project themselves through the vagus to provoke such gastrointestinal dysfunctions as gastritis, pylorospasm, peptic ulcer, spastic colon or biliary dyskinesia.

USUAL ADULT DOSAGE:

One tablet three times a day.

SUPPLIED as aqua-colored, compression-coated tablets containing 15 mg. of Pro-Banthine (brand of propantheline bromide) and 5 mg. of Dartal (brand of thiopropazate dihydrochloride).

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THE CHEMOTHERAPY OF TUBERCULOSIS

DRUG RESISTANCE

Clinical evidence of bacterial resistance should also be watched for throughout treatment. If sputum becomes positive after a period of negative reports or if, despite regular chemotherapy, relapse is indicated by symptoms or X-ray evidence of spread of disease, the treatment program should be reviewed and the drug combination changed pending a laboratory report on bacterial susceptibility. Loss of susceptibility to PAS rarely occurs early in treatment. Thus, this drug can usually be continued while either isoniazid or streptomycin is changed.

NONPULMONARY TUBERCULOSIS

Nonpulmonary tuberculosis can be treated, in general, by the same drug combinations used for pulmonary tuberculosis and, if necessary, at the same time. As previously noted, triple drug therapy may be needed for some of the more severe forms of tuberculosis and isoniazid alone may be used in chemoprophylaxis or for mildly active forms.

CONDUCT OF TREATMENT

The conduct of chemotherapy in tuberculosis calls for prompt initial hospitalization of almost all patients who have newly diagnosed tuberculosis with symptoms. Before drug treatment is started, cultures should be obtained from sputum, gastric contents, bronchial washings, exudates, urine, or pus, and bacterial susceptibility tests should be made. Chemotherapy with at least two drugs, one of which is isoniazid, should be started with-

out further delay and should be continued without a break. Patients for whom PAS is prescribed must be impressed with the importance of continuing to take this drug in spite of minor upsets. Cultures of the sputum, if obtainable, should be made regularly and tested for bacterial susceptibility as a guide to treatment.

Chemotherapy should be continued for at least two years or for a minimum of six months after control of the disease has been demonstrated by absence of symptoms, by negative cultures, and by stable roentgenologic findings. If the sputum is still positive or a pulmonary cavity persists after six months of continuous chemotherapy faithfully taken, a surgical consultation is mandatory. If relapse has occurred after six months of treatment, hospital care is necessary.

Patients under treatment must be followed closely and their status reviewed periodically, preferably in consultation with a physician who has specialized in chest diseases. Throughout the course of treatment, it is essential that consultations be held between the physician in charge of the case and the medical and surgical, as well as laboratory and X-ray, specialists and also between the private practitioner on the case and the staff of the hospital or clinic. This principle should be followed in order to provide the patient with the continuous and adequate care that alone will ensure a return to health and that will enable the patient to look forward to an active, useful life, without fear of later relapse.

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Recent Advances in the Treatment Of Heart Disease*

A. HENRY CLAGETT, JR., M.D.**

One of the finest compliments I ever have received was your invitation to return to speak to this audience. Since its beginning over ten years ago, I have been a great admirer of your organization, particularly regarding the manner in which you have accomplished your aim of continued post-graduate training for your members. You are doing a wonderful job and I know that you will keep it up.

Dr. Taylor has given you a masterful dissertation on the diagnosis of ischemic heart disease. I am grateful to him for not discussing treatment because, had he done so, it would have left me with nothing to talk about.

You have just heard that diseases of the coronary arteries result in clinical conditions ranging all the way from angina pectoris on one end of the scale to frank myocardial infarction on the other end; all of these conditions, however, are grouped under the general heading of ischemic heart disease. There is nothing new in the treatment of myocardial infarction but later on I will take the liberty of reviewing some of the methods of established treatment. There is little new in the treatment of angina pectoris. The liberal use of nitroglycerin by the patient continues to be the most efficient method of treatment in existence. The sublingual or buccal administration of erythrol tetranitrate appears to

give some individuals a more lasting effect of the nitrates; it is doubtful, however, if there is in existence a true long-acting nitrate drug. It is in the borderline between angina pectoris and frank myocardial infarction that we have had a recent and important therapeutic development. I refer to the use of radioactive iodine in the treatment of coronary insufficiency.

A number of years ago a group of clinicians and investigators discovered that some patients with angina pectoris received considerable relief of their symptoms following thyroidectomy. This operation is, however, a major one and one not to be undertaken without considerable thought, particularly in a patient having as serious a condition as angina. The operative mortality in patients with angina is considerably higher than in those without. For this reason, the use of thyroidectomy in the treatment of angina never reached the stage of general use. Later on, some attempt was made to irradiate the thyroid gland by x-ray; this method of treatment also failed to become generally accepted for many reasons. With the development and availability of radioactive isotopes following World War II, it was only natural that radioactive iodine was investigated for its ability to perform a non-surgical thyroidectomy. This work was pioneered by Blumgart and his associates (1) in Boston. Blumgart, a most careful and conservative investigator, early reported excellent results in the use of radioactive

*Based on a presentation at the Post-graduate Seminar of the Arkansas Academy of General Practice, Monticello, Arkansas, March 24, 1960. Supported by a grant by Eli Lilly and Company.

**Chief, Cardiovascular Section, Memorial Hospital, Wilmington, Delaware.

iodine in patients with angina but his results were not nearly so good in patients with congestive heart failure. These observations have subsequently been confirmed by practically all clinicians using this method of treatment.

It must be emphasized that this treatment is not intended primarily for the so-called masked hyperthyroid (thyrocardiac) as described by Levine some years ago. Of course, if the patient is hyperthyroid in addition to having angina pectoris, the results can be expected to be much better but this treatment is intended for the euthyroid patient with angina. To get any benefit, it is necessary to make the patient hypothyroid and this is a factor that we advise be discussed frankly with the patient before treatment is begun. Patients should be cautioned that they are likely to become sluggish, intolerant of cold, their skin become dry, and other signs and symptoms of hypothyroidism. Balanced against these disadvantages, however, is the marked relief from pain that most of these people experience.

It is my observation that this most important therapeutic tool is not seen in its proper perspective by the average physician. We believe that it is either recommended too early or not at all by most of those who prescribe it. The average patient with angina pectoris can get along very well regardless of the amount of nitroglycerin he must take during the day. If a man is holding down his job and using twenty or thirty nitroglycerin tablets a day and the pain always responds immediately to one tablet, we do not recommend any change in therapy. At the other extreme is the patient with a frank myocardial infarction; radioactive iodine therapy is not recommended at this stage. The use of radioactive iodine should be considered when a patient who previously has been doing well begins complaining of pain that awakens him at night. This is a key symptom that indicates a deterioration in the patient's condition and a critical need for immediate re-evaluation of therapy.

The only pre-treatment workup necessary is a radioactive iodine uptake. This

consists in giving the patient a minute dose of radioactive iodine, a dose so small that it has no possible therapeutic effect, and measuring the uptake of this material in the thyroid gland six and twenty-four hours after it is given. The results will tell us in general terms whether or not the patient is euthyroid, hyperthyroid or hypothyroid. If the patient actually is hypothyroid, any thought of radioactive iodine therapy is discarded because it would be impossible to get beneficial effects; in fact, this might be one of the small group of patients in whom thyroid therapy will give relief. If the patient is euthyroid or hyperthyroid, on the other hand, the result of the uptake study will allow the therapist to determine the correct treatment dose. In some institutions a large treatment dose is routinely given; a dose large enough to insure the eradication of most of the thyroid tissue. Following this, severe hypothyroid signs and symptoms are controlled with the use of thyroid extract. In our institution we take a more conservative approach and give fractional therapeutic doses in an attempt to bring the patient to a level of hypothyroidism which will relieve the symptoms and yet not necessitate large doses of thyroid.

Other than bringing on hypothyroidism, the signs and symptoms of which have been mentioned previously, there have been no serious complications in this therapy. Occasionally, a patient will develop a mild thyroiditis approximately one to two weeks after the therapy dose but this has never been a serious complication. Those who criticize this method of treatment point out that as the patient approaches hypothyroidism, the blood cholesterol will increase. This is a considered risk and undoubtedly is undesirable but it is our opinion that it is not enough of a factor to outweigh the beneficial features we have seen following this treatment.

My experience with this method of treatment has been excellent. A number of patients have complained of the symptoms of hypothyroidism and have asked if they could take more thyroid to make these symptoms less noticeable. Upon

being told that this could be done but that the pain was likely to recur, they immediately and emphatically stated that they would be glad to keep their hypothyroid symptoms.

That is all that I am going to talk to you about in the field of recent advances in the treatment of heart disease. It had been my intention to talk to you about some of the surgical procedures but my good friends in Delaware who are members of your organization reminded me that you were doing more cardiac surgery in Arkansas than we are doing in Delaware and it would be carrying coals to New Castle. Instead, they urged me that, in keeping with your policy of post-graduate review courses, I review with you some of the principles and finer points of old and accepted treatments. The first president of the Delaware Academy of General Practice and I were taking care of a patient who had a severe coronary attack. I happened to mention that some of these patients got better no matter what we did or how well they followed our recommendations and, by the same token, some of them died regardless of our treatment. There is, however, a definite group somewhere in between where our treatment will swing the balance one way or the other and because of this I believe that we must pay great attention to every minute detail of treatment. With this in mind, I would like to review some minute details.

TREATMENT OF MYOCARDIAL INFARCTION OPIATES

The use of opiates is unquestionably a backbone in the treatment of the patient with acute myocardial infarction. Persistent pain in myocardial infarction is one of the complications that tends to give a poor prognosis. Unfortunately, many patients with persistent pain have had insufficient doses of opiates and proper dosage will immediately give the patient relief.

Do not forget that during the stage of acute infarction when there has been a tremendous upset in the usual cardiac dynamics, medications may not be well absorbed from the subcutaneous tissues. If the initial intermuscular or subcutane-

ous dose of an opiate does not result in prompt relief of pain, a second dose should be given intravenously.

The second common error in the use of opiates is that they are discontinued too soon. These patients are critically ill and should be kept in a state of drowsiness for at least the first week of the illness.

REST

Mental rest is as equally as important as physical rest. During the early days of an acute infarct, the patient should be kept so drowsy with opiates and sedatives that he is unable to worry about his condition. It is the physician's responsibility as soon as he allows the patient to become more alert to explain to him in simple terms the nature of his condition, the approximate length of time in the hospital and out of work, and the good prognosis. The doctor should not go into the patient and quote percentages of mortality statistics and so forth but the patient should be given an explanation due to an intelligent person and not merely a casual "everything is all right." Axel Munthe once wrote, "there is no drug as powerful as hope, and the slightest sign of pessimism in the face or words of a doctor can cost the patient his life." We should keep this truth in mind because it is never more important than with the patient who has suffered a recent myocardial infarction.

ARMCHAIR TREATMENT

Physical rest is important in the treatment of the patient with acute myocardial infarction. Studies in the laboratory show that healing of the myocardium has progressed to the point where some activity may be permitted after three weeks. Statistics show that the myocardium is particularly subject to rupture during the second week following the infarct.

Many years ago Dr. Levine of Boston advocated that the patient with congestive heart failure be allowed to sit in a chair, pointing out that edema of the legs was unsightly but that of the lungs was lethal. Later, he extended his observations to patients who had had acute myocardial infarction and who were in a state of pulmonary edema. These patients previously had a mortality rate of one

hundred percent but Dr. Levine found out that if they were *lifted* out of bed into an armchair and *lifted* back into bed, there would be an occasional survivor. He published these observations under the title of "Armchair Treatment" and it was not long before he was being misquoted. Many physicians began to treat their patients with acute myocardial infarction on the basis of early ambulation and many of these patients developed fatal complications. Dr. Levine never did recommend early ambulation of the patient with myocardial infarction but only that some of these patients might do better sitting in a chair than lying in bed.

OXYGEN

The use of oxygen is helpful in any stage of ischemic heart disease. Its use in the patient with acute myocardial infarction is standard. A word of caution is necessary regarding its administration; in other words, the approach to the patient. It has not been too long ago that wheeling an oxygen tent into a room was synonymous with calling the undertaker. If the patient is aware of what is going on, we should tell him that we are using the oxygen to help him get some relief from his pain and indicate that it is a temporary measure. Some patients like to be reminded that football players are frequently called to the sidelines to be given a whiff of oxygen. The mortality rate from acute myocardial infarction is high enough—let's not scare any of them to death.

DIET AND BOWEL FUNCTION

It is unfortunate that the average American has the idea firmly implanted in his mind that it is necessary to have a bowel movement every day to be "normal." We all know that this is erroneous and that a person is not constipated merely because he does not have a daily bowel movement. The average patient with myocardial infarction begins early in the course of the disease to worry because he has not had a daily bowel movement. We can take care of this in two manners. Give them nothing by mouth except clear liquids for the first week of their illness and keep them drowsy with opiates and sedatives so that they do not

worry about anything. For the past few years we have routinely given these patients one of the stool softeners such as Colace from the first day of the illness. All physicians have had patients die on the bedpan following an acute myocardial infarction. It is imperative that we do everything in our power to keep these people from straining. If they cannot have a normal bowel movement by the tenth or eleventh day, we can give them either a laxative of their choice or an enema. There are several schools of thought, some men being proponents of laxatives and others of enemas. This problem must be individualized with each patient. In fact, at times the restrictions regarding absolute bed rest for three weeks can be relaxed and the patient may be *lifted* on and off of a bedside commode, particularly if he is in one of the new type beds that can be electrically lowered to a level even with that of the commode. We cannot be dogmatic about any of these rules but must do what we think is best at the particular time for the particular patient.

ANTICOAGULANTS

This is neither the place nor do we have the time to discuss the indications for anticoagulant therapy in patients with acute myocardial infarction. Briefly, we can sum it up by saying that if we are in a community where facilities are available for performing reliable prothrombin studies and if there are no contraindications to its use in the individual patient, anticoagulants should be given. Figure 1 is a rough and oversimplified scheme of the theory of blood coagulation. It is presented only to demonstrate the site of action of the two different types of anticoagulant drugs. From it you can see that heparin, acting late in the cycle, would be of immediate action and by the same token, once the administration of the drug had been discontinued, its action would be of short duration. The coumarin drugs, on the other hand, exert their influence at several points earlier in the cycle and this shows why the coumarin drugs take from twenty-four to forty-eight hours to manifest their maximum effect and, by the same token, why their

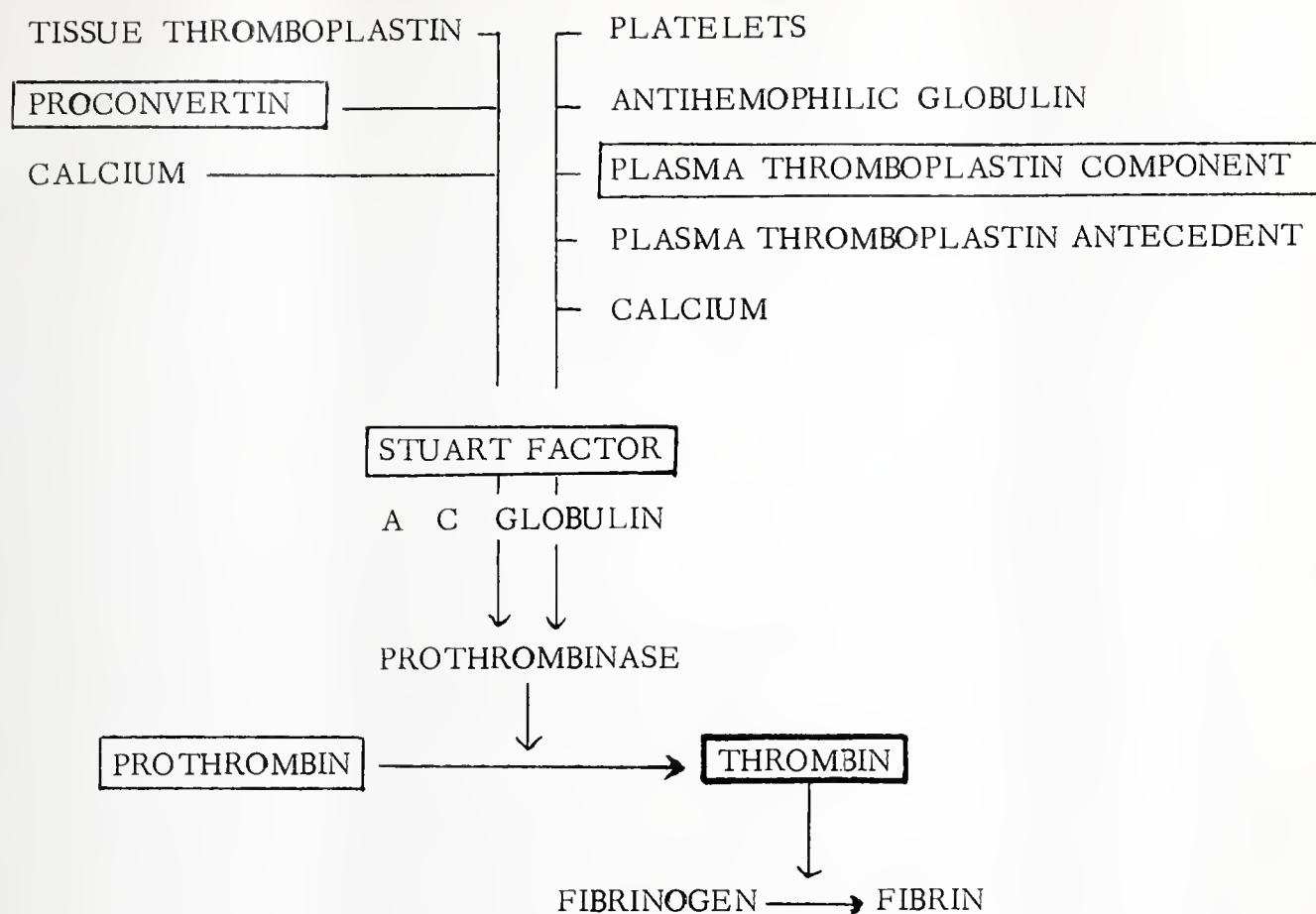


Figure 1

Simplified Concept of the Coagulation Mechanism. Factors influenced by the coumarin-type anticoagulants are enclosed in light rectangles; that influenced by heparin (thrombin) is in heavy rectangle. This is to illustrate the different portions of the clotting mechanism affected by the different type anticoagulants and explains the time difference in their reactions. (Adapted from Sise et al., New England J. Med. 259:269, 1958.)

action will persist for a number of hours after the drug has been discontinued. In patients with a severe myocardial infarction, particularly those with complications such as persistent pain, shock, heart failure, and obesity, both types of drugs are given simultaneously, the heparin being discontinued at such time as the prothrombin level indicates that the coumarin drug has exerted its therapeutic effect.

Heparin, because of its action, is the ideal anticoagulant. It exerts an immediate effect and when discontinued, the effect disappears rapidly. The disadvantage of heparin is its expense and the fact that it must be given parenterally, preferably by vein. Its use is controlled by an inexpensive test, the Lee-White coagu-

lation time, which may be performed at the bedside.

The coumarin drugs, on the other hand, are relatively inexpensive and may be given by mouth. Their disadvantage is in their slow action and the fact that their administration must be controlled by a daily prothrombin time, an expensive and highly technical test.

If bleeding occurs during heparin therapy, it usually is sufficient to discontinue the heparin. In the occasional case with severe bleeding, the heparin effect may be neutralized by the intravenous administration of protamine sulfate. Blood transfusion may be necessary. These secondary measures are rarely needed in the patient who bleeds due to heparin. On the other hand, bleeding due to the action of coumarin drugs will usually be prolonged and must be treated actively. Vitamin K1 (Mephyton) has a specific action that is antagonistic to that of coumarin but it must be given in large doses and the administration must be continued over a period of hours.

The administration of the coumarin

drugs is one of the procedures in the treatment of the patient with myocardial infarction where minute attention to detail will be rewarded by favorable reactions. Over the past twenty years our experience has shown that the following factors can be most helpful in the proper administration of the coumarin drugs:

1. *One person prescribing.* At some of our Government service hospitals and at the University of Michigan Hospital, anticoagulant teams have been set up in which a maximum of two men have been assigned the responsibility of prescribing the daily dosage of the coumarin drugs. In many places it is the practice to write an order on the chart to have some member of the house staff prescribe the daily dose of a coumarin drug; this usually results in the order being written by a different individual each day of the week and it is easy to see how a lack of uniformity will result. The staff members of most private hospitals are antagonistic to any suggestion that this service be unified and in such instances the logical procedure would be for the attending physician to prescribe the drug himself.

2. *Single chart of prothrombin time and daily dose.* Many hospitals have developed a page on their chart, each line showing the date, the prothrombin time both in patient seconds, control seconds, and percentage, and the dose of the coumarin drug given on that particular day. By this chart it is simple for the therapist to glance and see the effect of certain doses of the drug in the past and thereby be able to project his thinking twenty-four and forty-eight hours in advance. Since these charts have become standard equipment in our hospital in the past five years, the prescribing of the coumarin type drugs has become more efficient.

3. *Same laboratory technician.* The prothrombin time determination is a very delicate test and it is easy to see by the results when the regular technician has a day off or is on vacation. Certainly, no more than two technicians in a laboratory should be assigned to performing this most delicate test. By keeping the number limited, it is hoped that more uniform values will be attained.

4. *The test should be performed at the same time each day.*

5. *The drug should be given at the same time each day.* The prescribing physician should determine some time in his day when it will be convenient for him to prescribe all of the coumarin drugs. This does not necessitate his being in the hospital; he can receive the report of the prothrombin time and prescribe the dose of the drug by telephone. To do this, he should have a duplicate copy of the prothrombin chart with him.

6. Unless the prothrombin time exceeds thirty-five seconds, it is advisable to give some dose of the coumarin drug every day. We too frequently see a rebound several days following a day in which no drug has been prescribed.

Tables I to V illustrate the charts mentioned in paragraph 2 above and show how having all of these data on one sheet can be helpful in prescribing the drug.

The coumarin drugs should not be prescribed until a prothrombin time has been obtained and found to be normal. The usual initial dose of dicumarol is 300 mg.

TABLE I

Date	Control (Seconds)	Patient (Seconds)	Percent	Dose of Dicumarol
10-12	12.5	11.8	100	300 mgm.
10-13	12.5	13.2	91	200 mgm.
10-14	12.5	21.8	21	50 mgm.
10-15	12.5	34	11	None
10-16	13	36	10	None
10-17	13	29	14	50 mgm.
10-18	12	26.2	16	50 mgm.
10-19	13	26.2	17	50 mgm.

White man, age 60. An example of good control of adequate anticoagulant level. In retrospect it might have been advisable to give a small dose on 10-16 but this patient, after induction, kept at a constant and adequate level taking 50 mgm. dicumarol daily.

TABLE II

Date	Control (Seconds)	Patient (Seconds)	Percent	Dose of Dicumarol
8- 1	12	13.8	79	300 mgm.
8- 2	—	—	—	200 mgm.
8- 3	12.5	18.8	28	100 mgm.
8- 4	12.5	28.6	14	75 mgm.
8- 5	12	34	10	25 mgm.
8- 6	12.5	35.6	10	None
8- 7	12.5	26	16	50 mgm.
8- 8	12	24.3	18	75 mgm.

White man, age 61. Onset occurred in evening; hence dose of 8-1 was given at 9 p.m. No prothrombin time was obtained on 8-2 and beginning 8-3, the test was obtained in the morning. In retrospect, a small dose on 8-6 or a dose of 50

mgm. on 8-5 might have put him in the middle of the effective level on 8-8 rather than on the border of inadequate level. In general, however, levels were sufficient.

TABLE III

Date	Control (Seconds)	Patient (Seconds)	Percent	Dose of Dicumarol
1-19	13	13.6	93	200 mgm.
1-20	14	18	64	150 mgm.
1-21	13.5	34.8	12	25 mgm.
1-22	13	22	25	75 mgm.
1-23	12	24.8	17	50 mgm.
1-24	12.5	20.5	24	50 mgm.

White woman, age 57. This lady, for reasons unknown, was given inadequate doses of dicumarol on the first and second day. Her level was adequate on 1-21 but was not satisfactory on 1-22 and 1-24. The unsatisfactory level of 1-22 can definitely be blamed on the inadequate dose of 1-20; that of 1-24 may well be due to the small dose given on 1-21. The dose given on 1-21 can not be criticized except in retrospect. It is probable that had adequate dosage been given from the beginning, this lady's control would have been satisfactory.

TABLE IV

Date	Control (Seconds)	Patient (Seconds)	Percent	Dose of Dicumarol
4-17	13	14	82	300 mgm.
4-18	13	16	58	200 mgm.
4-19	13	18	42	100 mgm.
4-20	13	20	38	100 mgm.
4-21	13	23	30	100 mgm.
4-22	13	21	29	75 mgm.
4-23	13	30	20	75 mgm.
4-24	13	29	21	25 mgm.
4-25	13	31	19	None
4-26	13	24	28	50 mgm.
4-27	13	20	38	100 mgm.

White man, age 48. This man required more than the average dose to bring him to an effective level. This level was not reached until the seventh day. In view of this, subsequent doses should have been larger than those given. Some drug should have been given on 4-25; the omission allowed him to go completely out of control.

TABLE V

Date	Control (Seconds)	Patient (Seconds)	Percent	Dose of Dicumarol
12-9	—	—	—	300 mgm.
12-10	12.5	17.6	38	75 mgm.
12-11	13	21.4	22	25 mgm.
12-12	12	24.2	18	None
12-13	11.5	19	24	25 mgm.
12-14	12.5	29	14	None
12-15	13	24.6	18	12.5 mgm.
12-16	13.5	19.6	38	100 mgm.

White woman, age 47. The only adequate dose, that of 12-9, should not have been given without knowledge of the patient's prothrombin time. Otherwise, all doses were inadequate.

and this should be followed by 200 mg. on the second day unless the prothrombin time has dropped to within a therapeutic range in that short time. This is most unusual but sometimes occurs in a person

in whom a single dose of a coumarin type drug will keep them at a therapeutic level for many days. On the third day you may begin to look for maximum effect of the drug and doses anywhere from 100 to 25 mg. may be prescribed according to the prothrombin time. If the seconds are exactly twice that of the control, consider the use of 100 mg. of dicumarol while if the seconds approach two and one-half times the control, tend toward 25 mg. with other variations in between.

It is common practice to prescribe the dose of a coumarin drug according to the percentage of prothrombin in the blood. This is satisfactory for the therapist who has had great experience with these drugs; in his hands, satisfactory levels can be obtained and maintained regardless of whether he uses the percentage or the seconds. For the less experienced therapist, however, using the seconds as a guide can result in less variable levels. In so doing, it is the aim to keep the daily prothrombin time somewhere between two and two and one-half times the control seconds, not allowing the seconds to exceed thirty-five in any instance. This applies to the patient who is in the hospital under observation and who is having daily prothrombin times performed. For the patient who is receiving long term anticoagulant therapy on an out-patient basis, it is safer to keep his levels between one and one-half and two times the control seconds. It is important to give a dose of the drug every day. If the prothrombin time in seconds exceeds thirty-five, we do not give any medication but we do not give vitamin K1 for a prolongation of the prothrombin time alone. When the seconds exceed thirty-five, we take great care and observe the patient for any signs of bleeding, including microscopic red cells in the urine. If there is no evidence of bleeding we do nothing except to withhold the drug for that particular day. If there is a small amount of bleeding, we will give a small dose of vitamin K1 by mouth. If frank bleeding occurs, larger doses of vitamin K1 must be given intravenously.

In summary, we did not discuss the pros and cons of whether or not the anti-

coagulants should be given. We did discuss the fact that if they are given, great care should be taken to keep the level as constant as possible and not have the patient bouncing between an inefficient, non-therapeutic level or overdosage.

DIGITALIS

Before I am accused of impertinence for discussing the subject of digitalis before this group, I hasten to mention a recent article by a great physician—Tinsley R. Harrison of Birmingham, Alabama—entitled “Augmentation—a third stage of digitalis therapy” (2). He emphasized the fact that of all the patients referred to him because of “intractable failure,” the majority were taking inadequate doses of digitalis. The failure quickly disappeared following the redigitalization.

Most of us are familiar with digitalis leaf and many of us with one of its glycosides, digitoxin. These preparations have been in clinical use for many years and their idiosyncrasies are fairly well understood. Both of these preparations are long acting, the effects being cumulative and persisting for many days after the drug has been discontinued. It is not at all unusual to see digitalis effects in the ECG twenty-one days after discontinuance. These drugs have the advantage of keeping the patient in a state of compensation; their disadvantage is that overdosage with its undesirable symptoms may persist for a considerable time.

Digoxin, a glycoside of digitalis lanata, has been in use for a shorter period of time than the previously mentioned preparations. Digoxin differs from them in its brevity of action. Digoxin has become popular in many places because of the fact that toxic symptoms, if occurring, will disappear in a matter of hours after the drug has been discontinued. This is indeed a great advantage as far as toxicity is concerned. The disadvantage of digoxin is the ease with which patients will slip out of control and go into a state of decompensation. With the use of digoxin one must be careful to give an adequate dose and augmentation, as recommended by Harrison, must be practiced.

Figure 2 is a graphic representation of the therapeutic use of digitalis. Bar

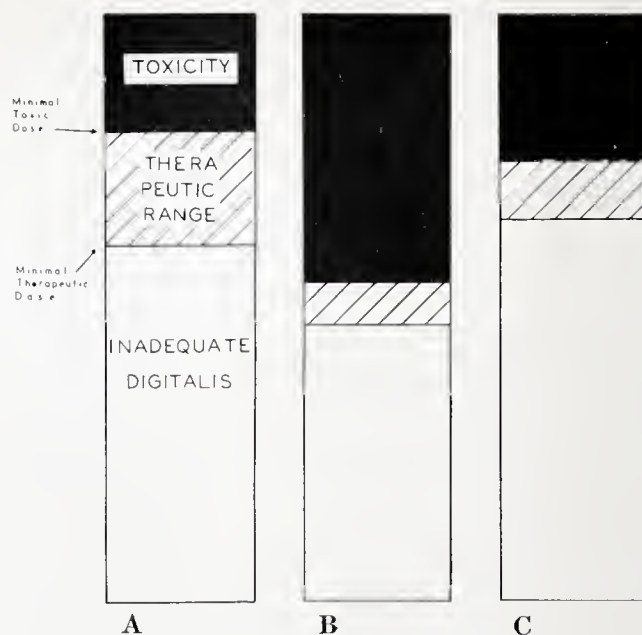


Figure 2

Graph A—average patient with congestive heart failure. Graph B—patient with rheumatic activity, cardiac surgery, or myocardial infarction. Graph C—patient with hyperthyroidism. These are general types and it is important to realize that any patient can fall into any of the above patterns regardless of the etiology of the heart failure.

graph A shows a large area between the baseline and line denoting minimal therapeutic dose; this area represents inadequate digitalization. The cross-hatched area between the minimal therapeutic dose and the minimal toxic dose is the therapeutic range and it is in this area that we attempt to keep our patients. The area above the line representing the minimal toxic dose represents toxicity and this, as well as inadequate digitalization, is to be avoided. Bar graphs B and C show examples of a narrowing of the therapeutic range. In B, the minimum therapeutic dose is much smaller than it is in A and C it is higher. In either case, the patient is apt to go into a state of digitalis toxicity shortly after reaching a point of minimal therapeutic effect. This narrowing of the therapeutic range is indeed one of the headaches in digitalis therapy. The type of graph B is frequently seen in patients with acute rheumatic carditis, patients who have had cardiac surgery, and some patients with myocardial infarction. Graph C is representative of the patient who has hyperthyroidism. While graph A is intended to show the average patient with congestive failure, it must be emphasized that

any patient can fall into a narrow therapeutic range as represented in the other graphs.

The patient with the narrow therapeutic range may be likened to the "brittle diabetic." It is extremely difficult to give him a dose sufficient to relieve his congestive failure and yet small enough to prevent his going into digitalis toxicity. In some of these patients we have had satisfying results by giving a dose of digitalis leaf or digitoxin that is slightly smaller than the necessary daily dose and supplementing this by daily doses of digoxin which can be withheld at anytime the patient shows evidence of toxicity. Each of you should stick to the preparation of digitalis with which you have had the greatest experience, but it will be helpful to get a working knowledge of some of the other preparations so that some of your more "brittle" patients can be handled in the above manner.

SUMMARY

While some patients will get well regardless of what we do and others will die, there are some in the middle where great attention to detail will be the deciding factor.

Radioactive iodine therapy has been most helpful in patients with angina pectoris but should not be used until ordinary methods have proven unsatisfactory. The onset of night pain is an indication for its use.

In the treatment of the patient with acute myocardial infarction, we should be

sure that our dose of opiates is adequate and given in a manner to be absorbed. Mental rest is equally as important as physical rest; armchair treatment does not mean early ambulation. Do not put a conscious patient in an oxygen tent without some word of explanation and encouragement. Try to educate your patient regarding bowel movements but, as a temporary expedient, take care of the individual's bowel problems in an individual manner. If anticoagulants are given, take care to prescribe them in a manner to keep the prothrombin time at a relatively constant level.

In prescribing digitalis or one of its glycosides, stick to the preparation whose action you know best but try to get some working knowledge of the other preparations. In "brittle" patients with a narrow therapeutic range, consider the possibility of combining a small dose of one of the long acting drugs with a supplementary dose of one of the short acting drugs, the latter being varied from day to day.

Above all, remember that your patient is an individual and a worried individual and take that little extra time to let him know that you are interested in him.

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The Management of Carcinoma of The Colon and Rectum*

JOHN M. WAUGH, M.D.**

As one studies the history of various surgical procedures for the extirpation of portions of the colon and rectum affected by cancer, it is amazing how many instances are found of worth-while operations being discarded because of the prohibitive operative mortality associated with them. Now that the physiology and bacteriology of the normal and diseased colon are better understood, we know that the talented surgeons of the past, although they were carrying out well-conceived procedures, were unsuccessful because they did not realize how important it was to have a clean, empty, collapsed colon before attempting resection and primary anastomosis.

Surgeons have shown an increasing reliance on the readily available orally administered antibiotic agents for reducing the numbers of intestinal bacteria preoperatively. They are forgetting the hard lessons learned in the past—that, in a patient without intestinal obstruction, a careful 3-day preparation, including a low-residue diet, use of phospho-soda (Fleets), and gentle cleansing irrigations, is fundamental; use of bacteriostatic agents given orally is at best only an adjuvant measure. Phillips and associates (1), in a careful comparative study of patients given orally administered antibiotic agents preoperatively and those operated on without such preparation, found little difference in morbidity and mortality rates in the two groups; there was slightly less morbidity in the antibiotic-treated group in patients requiring a low anastomosis in the rectum. If antibiotic agents are used in preparation, one should constantly be alert to the possibility of a postoperative staphylococcal enteritis, and if such is suspected, therapy with erythromycin or novobiocin should be instituted until the results of culture of the stool and sensitivity studies are

known. Although the primary reason for having the bowel clean, empty, and collapsed is that it facilitates safe extirpation of the lesion and accomplishment of primary anastomosis, a second advantage is that exploration of the colon for a polyp or small additional primary lesion is greatly facilitated. Thomas and associates (2) reported that 3 per cent of cancers of the colon proved to be multiple; the tumors appeared simultaneously (synchronous) in 2 per cent of cases, and in 1 per cent the additional primary lesions were found only on subsequent (asynchronous) examination.

If during laparotomy the surgeon finds an unsuspected malignant lesion in the colon, the safest course, if it is not causing obstruction, is to discontinue the operation, prepare the colon properly, and operate again a week later. This will permit a safer and more adequate operation, with a better chance of cure. If the unsuspected colonic lesion is causing obstruction or is perforating, a preliminary colostomy is necessary; the colonic stoma can often be closed at the time of the second operation.

ACUTE OBSTRUCTION

Careful physical examination and an ordinary roentgenogram of the abdomen will usually reveal whether the obstruction is in the left portion of the colon, where the sigmoid is most frequently involved, or in the right part of the colon, which is a more hazardous condition because of the possibility of perforation of the cecum due to overdistention.

The easiest, safest, and quickest operation for obstruction of the left portion of the colon is a transverse loop colostomy made through an upper transverse or upper midline incision. The incision should be just large enough to admit the hand readily for gentle exploration of the liver and determination, if possible, of the nature and location of the lesion. If hemorrhagic fluid is encountered in the peritoneal cavity or if no neoplastic lesion is found causing the obstruction, volvulus

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or other strangulating lesion of the large or small intestine should always be ruled out. A segment of skin about 1 cm. wide (with subcutaneous fat intact to preserve its blood supply) is brought under the loop of transverse colon to keep it at the level of the skin and prevent spillage of intestinal contents into the distal opening of the loop. Immediately after protective dressings are applied to the wound to wall off the abdominal cavity, the colon is opened to permit egress of gas and fluid and so relieve the dangerous intraluminal pressure on the cecum.

If the contour of the abdomen and the distribution of gas as seen on the roentgenogram indicate that the obstructing lesion is in the proximal half of the colon, cecostomy is usually the procedure of choice, and for this a right transverse, oblique, or rectus incision may be used. With a distended, friable cecum, cecostomy can at times be a difficult procedure. It may prove advantageous to siphon off fluid and gas with a large-caliber needle or a catheter. This measure will certainly reduce the hazard of inadvertent perforation and gross contamination, which can occasionally prove distressing to the surgeon. A small portion of the cecum can then be exteriorized and sutured to the skin before it is opened. If a tube cecostomy is favored, it is important to use a large catheter at least the size of a French No. 24 catheter.

If the obstruction is in the ileocecal portion of the bowel and all of the distention is in the ileum, a side-to-side ileo-transverse colostomy will provide safe and immediate decompression. If it has been possible to decompress the ileum completely with a Miller-Abbott tube, it is usually advisable to proceed with radical right hemicolectomy in one stage without resorting to preliminary ileo-transverse colostomy. Similarly, if one is dealing with a closed-loop obstruction between a competent ileocecal valve and a lesion completely obstructing the right portion of the colon, it may occasionally be possible to deflate the distended bowel by aspiration and proceed with right hemicolectomy without resort to cecostomy. Generally, however, when dealing

with a distended bowel containing stool, the safest operation is proximal decompression by means of either colostomy or cecostomy. Obstruction not only increases the risk of operation, but it decreases considerably the chance of achieving a cure of the cancer. Wilder (3), studying survival rates after resection for malignant lesions of the right part of the colon, found that if there was no obstruction, 76 per cent of the patients survived 5 years; if there was partial obstruction, 42 per cent survived for this period; with complete obstruction present, however, the percentage of patients surviving 5 years decreased to 23.

GENERAL PRINCIPLES OF OPERATION FOR CANCER

Several principles must constantly be kept in mind in connection with surgical removal of a carcinoma if the patient is to be given the best chance of cure provided by our present knowledge. First, the surgeon must be well trained and skilled in dealing with the problem, for it is usually the initial operation that determines the chance for cure. Few patients can be cured by a second operation, even when it is done skillfully, if excision at the original procedure was inadequate. Second, the carcinoma should be isolated if possible by heavy ligatures or tapes placed around the bowel 3 or 4 inches distal and proximal to the lesion, with the hope that intraluminal implantation can be kept to a minimum. Wrapping a gauze pad around the lesion may help prevent peritoneal implantation of carcinomatous cells from the outer surface of the bowel. Third, the vessels in the root of the mesentery should be ligated as far from the site of the lesion as the procedure permits; this should be done as early as possible to prevent venous dissemination of malignant cells, which, it is now known, occurs with only minimal manipulation of a malignant lesion. Fourth, there should be as little manipulation of the tumor as possible, and the dissection should be done with the scalpel or scissors at sufficient distance from the primary tumor to avoid cutting across microscop-

ically involved lymphatics, which would result in dissemination of malignant cells.

RIGHT AND TRANSVERSE COLON

If the primary carcinoma involves the ileocecal region, cecum, or proximal half of the ascending colon, it is well to sacrifice the ileocolic and right colic vessels, ligating as close to the superior mesenteric origins of these vessels as possible. About 6 inches of terminal ileum, as well as the ascending colon, hepatic flexure, and the proximal half of the transverse colon are then removed. Intestinal continuity is re-established by means of an end-to-end ileotransverse colostomy.

If the carcinoma is situated in the hepatic flexure or proximal half of the transverse colon, the middle colic vessels should be excised, together with the adjacent lymph nodes, in addition to the above-mentioned dissection; the transverse colon is removed well to the left of the midportion. Phillips and associates (4), in an interesting study of the involvement of lymph nodes in carcinoma of the hepatic flexure, found that the middle colic nodes were affected in 20 per cent of cases.

When the midportion of the transverse colon is the site of origin of the tumor, it is usually well to sacrifice both the middle colic and the right colic vessels, because frequently these vessels are so close to the middle colic lymph nodes that thorough removal of the nodes is difficult unless the right colic artery and vein are included in the dissection. It is usually easy to approximate the ends of remaining sections of the transverse colon for anastomosis.

LEFT COLON AND SIGMOID

Malignant lesions of the distal portion of the transverse colon, the splenic flexure, and the descending colon are frequently best removed by sacrificing the middle colic and left colic vessels and removing the left half of the transverse colon, the splenic flexure and the descending colon. The proximal part of the transverse colon is then joined end to end with the upper portion of the sigmoid colon. This procedure permits wide removal of the node-bearing mesentery. Although the inferior mesenteric artery is

preserved, lymph nodes along it and the aorta may be included in the resection.

Because of the long mesentery of the sigmoid colon, a radical removal of the node-bearing region is possible in operations for cancer in this part of the bowel. In the routine approach, the inferior mesenteric artery is ligated just distal to the left colic branch. However, if extensive spread of the malignant process to the lymph nodes is obvious, the inferior mesenteric artery may be ligated at the aorta, and the vein just inferior to the pancreas. Distally the superior hemorrhoidal artery is ligated posterior to the upper part of the rectum. An end-to-end anastomosis is performed between the lower portion of the descending colon and the upper part of the rectum or rectosigmoid. In this region it is not uncommon to find diverticulitis or diverticulosis. If possible, the anastomosis should be made above the site of diverticulosis, but if this is not feasible, a region should be chosen where there are no diverticula that might give rise to postoperative leakage.

RECTOSIGMOID AND RECTUM

The terminal portion of the large bowel is approximately 15 cm. in length, and in this segment arise 58 per cent of all cancers of the colon and rectum. This region has long been the "seat" of great controversy with respect to the choice of operative procedure. Space will not permit an evaluation of the various surgical procedures that have been tried or of the interesting observations made by numerous investigators regarding the spread of carcinoma of the rectum. It is sufficient now to state that careful study of the nature of lymphatic spread and analysis of the 5-year survival rates subsequent to operations that leave the anal sphincter intact definitely indicate that when such operations are used advisedly they are just as curative as the combined abdominoperineal operation of Miles, and they do not have the disadvantage of necessitating a permanent colonic stoma. By using the operations advisedly I mean that the surgeon should know the indications and contraindications for their use and that it is only after experience with Miles' operation that he can effectively

carry out a similarly wide excision of the areas of possible spread using the sphincter-preserving procedures.

If the terminal 15 cm. of the large bowel is divided into thirds, it is a general rule that carcinomas originating in the upper third (lower edge of lesion 10 cm. or more above the pectinate line) can be removed by means of anterior resection with end-to-end anastomosis of the upper part of the sigmoid and midportion of the rectum. Lesions arising in the middle third (lower edge 5 cm. or more above the pectinate line) can generally be removed by means of the combined abdominoperineal resection (pull-through operation) with preservation of the external anal sphincter. If the lower edge is 7 cm. or more above the pectinate line, the entire anus and 1 or 2 cm. of the lower portion of the rectum can be preserved.

When the carcinoma is in the lower third portion of the region under discussion, the combined abdominoperineal operation of Miles is indicated, with formation of a permanent colonic stoma. However, the upper and lateral dissections in all three procedures—anterior resection, pull-through method, and Miles' operation—are similar. The inferior mesenteric artery is ligated generally just distal to the left colic branch, but if there is suspicion of involvement of lymph nodes above the promontory of the sacrum, the artery should be divided at the aorta. In all three procedures great care should be exercised to preserve an adequate blood supply to the lower section of the descending colon and upper part of the sigmoid colon by means of the marginal artery.

Although careful preoperative digital and proctoscopic examination will usually provide a strong indication of the type of operation required in a particular case, it has been our practice in all cases to inform the patient that a colonic stoma may be necessary and that this cannot be

determined until the extent of the lesion is ascertained during the abdominal operation. The body type of the patient, the size of the pelvis, the degree of mobility of the mesentery of the upper sigmoid, the presence of diverticulitis or intussusception of the lesion—all of these are factors that may cause the surgeon to alter the procedure which preoperatively seemed to meet the requirements of a particular patient's condition. In performing anterior resection and any of the pull-through procedures, one should always remove a minimum of 4 or 5 cm. of normal rectum distal to the lower edge of the carcinoma.

The outlook at present for the patient with carcinoma of the colon or rectum is considerably brighter than it was 30 years ago. The operative mortality is low (3 per cent or less), and the procedure may usually be carried out in one stage without a temporary colostomy. The chances that the patient will need a permanent colonic stoma are about one third of what they were for his father's generation, and the 5-year survival rate has increased by approximately 15 per cent (to 55 per cent). Since it will be difficult to increase the scope of colonic operations, it is hoped that in the future, methods of earlier diagnosis will appear and that effective chemotherapeutic agents will be discovered that will destroy malignant tissue not eradicated by operation.

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Automobile Injuries of the Urinary Tract*

WM. W. CHRISTESON, M.D.**

Trauma means force. No matter if the trauma is in the form of a football injury, a surgeon's clamp, or an automobile accident, the end results are the same—either hemorrhage, extravasation, or obstruction.

The incidence of injuries to the urinary tract is definitely increasing with the increase in the production of more and faster automobiles. This is evidenced by the fact that now over half the injuries to the urinary tract occur during automobile accidents (1).

I would like to confine my remarks on automobile injuries, mainly to the kidney and bladder, since the ureter and urethra are rarely injured in this type of trauma.

The large majority of injuries to the kidney occur in men, owing not only to greater vocational exposure, but also to more inflexible muscular fixation of the kidney. The most frequent age is between 15 and 30 (1).

The kidneys for the most part are located well up in the bony chest cage. Being protected by the ribs, the lumbar spine, and the vertebral muscles, they are shielded from most ordinary and moderate injuries. On the other hand, trauma of sufficient force to fracture ribs, may force a bony fragment into the kidney substance, or the kidney may be crushed against the unyielding spine and its transverse processes. To a certain extent, the normal mobility of the kidney permits it to glide away from the force of the trauma. With such a friable, almost fragile organ, the incidence of renal injury in the adult is surprisingly low.

The consequence of injury to the kidney, as in the rest of the urinary tract, may be placed in two categories: (1) as a result of hemorrhage, and (2) as a result of sepsis. It seems to me that all my professional life I have been fighting two factors—pus and blood.

Renal injury may be of three major types: (1) contusion, (2) laceration, and (3) fragmentation. Depending upon the amount of hemorrhage, whether into the subcapsular area, or into the bladder through the lacerated renal pelvis, or into the peri-renal tissue, the symptoms of shock may be seen, and mass may be felt in the loin, or marked hematuria may be found. And depending upon the amount of extravasation, of urine, from the ruptured renal pelvis, either into the peri-renal tissues or into the peritoneal cavity, sepsis may be recognized. Renal injury may be very commonly associated with the injury of surrounding viscera. Particularly on the left side, renal injury may be confused with splenic trauma, and the differentiation of the two may be quite difficult. In such a situation a high degree of suspicion will potentiate the care of the patient. The liver and the chest contents must also be suspected and studied accordingly. Previously diseased kidneys are much more easily damaged than normal kidneys. As evidence of this, many cases of hydronephrosis or cysts of the kidney are not discovered until some trauma points to the kidney.

In our present day automotive and industrial injuries, a lacerated kidney may be only one phase of an extensive bodily damage, and in most cases it is of lesser importance than injuries to the other organs. The history of injury, followed by pain in the side, a tumor in the lumbar area, and blood in the urine, usually indicates renal damage. But rarely are all these signs present. The earliest and most positive evidence of renal damage is obtained from examination of the urine, which should be examined in all cases of abdominal injuries, even though no evidence of renal injury is present. Catheterization should be done if necessary in the male, always in the female. The degree of hematuria is no indication of the extent of renal injury. In exten-

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**Donaghey Bldg., Little Rock.

sive tears of the pelvis, rupture into a large vessel, obstruction of the ureter or pelvis of the kidney, or in the presence of severe shock, in which no urine is being produced, no urine or blood may reach the bladder.

X-ray studies, cystoscopy, a continued observation of the patient, noticing changes in abdominal rigidity, the size of the renal mass, the blood, and the blood pressure, determine the diagnosis and method of treatment.

X-ray examination gives definite diagnostic information relative to the state of the kidney, and the possibility of associated bony lesions. X-rays should be made as soon as the condition of the patient permits, since gas distention develops rapidly and may obscure the renal outline. The flat plate of the IVP may show haziness of the renal outline, obliteration of the margin of the psoas muscle, or deviation away from the injured kidney. These suggest peri-renal bleeding. Enlargement of a kidney shadow, suggests subcapsular hemorrhage.

Intravenous pyelograms may be made in the presence of extensive complications, and even when the patient is unconscious. They have a disadvantage in that the secretory parts of the kidney may be inhibited by the trauma and that in the presence of shock, the ability of the kidney to secrete urine is inhibited. The injured kidney continues to secrete only as long as the renal tissue and blood supply are still intact. Therefore in most cases, excretory urography performed shortly after rupture gives the most reliable information, concerning the gravity of the lesion. Often extravasation of the urine may be seen in an excretory pyelogram. Lack of visualization of the injured kidney in an intravenous pyelogram not infrequently indicates the presence of a pathological process requiring surgical exploration. By contrast, visualization of the injured organ, does not rule out injury in all cases. Approximately 50 per cent of the cases studied by intravenous urograms can be positively diagnosed (1, 2).

Cystoscopy, ureteral catheterization and retrograde pyelography are necessary

in order to establish the diagnosis, in the remaining 50 per cent of the cases. This procedure is the most accurate tool that we have in the diagnosis of kidney injury, and in 90 per cent of cases gives a definite diagnosis (1, 2). Retrograde pyelography also offers definite accurate information, concerning the opposite kidney. The risk of infection resulting from cystoscopy is slight and no harm comes from injecting the newer, absorbable, sterile, contrast solutions.

In many cases, particularly of penetrating injuries, care of the renal condition is less urgent than that of complicating lesions, and in most cases only conservative local treatment is necessary. Palliative treatment is sufficient and yields good results in both open and closed cases of renal injuries, but bedrest is essential and careful observation should be made in extensive hematuria, of the amount of pain and for evidence of hemorrhage and infection. Early return to routine life may cause serious trouble. Many cases with evidence of only mild renal injury have returned to active life after only a few days rest, and some have extensive secondary hemorrhage, others a severe urinary infection, hydronephrosis, peri-renal abscess, or infarction. The main point to be settled regarding any renal injury is whether exploration of the injury is necessary and if so, when.

In general immediate emergency exploration of the ruptured kidney is unwise. Perineal hematoma is quite often self limiting and the general clinical situation should be studied thoroughly before surgical exploration. There are 4 recorded cases in which solitary injured kidneys were removed (3). Rupture of the renal pedicle is a critical condition and most often death will occur before adequate therapeutic measures can be taken. However, a delay of several hours before operation in the usual severe renal injury is not dangerous and may be quite helpful in combating shock and determining the degree of associated injury. Other severe injuries usually take precedence over renal injury. Prompt, neurosurgical intervention may be called for in cases of head injury, tracheotomy may be indi-

cated on an emergency basis, exploration of a ruptured intraperitoneal viscus may be necessary, and orthopedic evaluation with splinting of fractures may be done before renal exploration.

When there is sign of internal hemorrhage, such as rising pulse rate, falling blood pressure, and increasing mass, immediate operation may be necessary.

Continuous hematuria and signs of infection or internal hemorrhage all indicate that extensive damage is present and that exploration is necessary. Hematuria alone, however, is not sufficient reason for early surgical exploration. Primary hematuria usually subsides in 24 to 48 hours, but if it persists and is profuse the kidney should be explored.

Urinary extravasation usually calls for early and extensive incision and free drainage of the region.

Surgical procedures for wounds of the kidney may be included in 3 commonly performed categories: (1) drainage of the renal region, usually used in extravasation of urine, (2) partial nephrectomy, and or repair of injured kidney, and (3) nephrectomy.

Injuries of the kidney, particularly those of the renal blood supply, may lead to a heretofore unusual complication. This complication is hypertensive vascular disease, and it may develop quite some time after the injury of the kidney. For this reason, conservatively treated renal injuries should be followed for a long period of time, for the development of hypertension, and should this occur, reevaluation of the injured kidney should be made. If sufficient evidence for renal hypertension is found, the devitalized tissue should either be removed by partial or total nephrectomy, or the vascular injury repaired if possible.

INJURIES OF THE BLADDER

The urologist has a major responsibility when faced with the problem of a bladder injury. Delay in diagnosis and failure to promptly and accurately treat this, will almost always result in the death of the patient. The bladder may be injured by a variety of agents which may penetrate either externally, such as a gear shift, a portion of a broken steering wheel, or by

non-penetrating agents, such as blows to the lower abdomen when the bladder is distended and fracture of the bony pelvis with torn moorings of the bladder. This is very important in ruptures of the urethra at the prostatic urethra. An empty bladder is well protected by the bony pelvis, although penetrating agents can reach the organ, and fractures of the pelvis may tear the bladder at its moorings. A full bladder is very vulnerable to penetrating agents and peculiarly vulnerable to nonpenetrating blows to the lower abdomen. It has been said that a normal bladder which is empty cannot be injured by a blow to the lower abdomen. On the contrary, slight body contact or circumstances leading to a strong contraction of the lower abdominal muscles are reported frequently to have produced rupture of a full bladder.

Bladder injuries lend themselves readily to simple classifications as to the types of injury: (1) contusion, (2) interperitoneal rupture, (3) extraperitoneal rupture, and (4) combined intraperitoneal and extraperitoneal rupture.

Contusion is a non perforating injury of the bladder, in which there is no escape of bladder contents, except through normal channels.

Intraperitoneal ruptures denote a break in the continuity of the bladder wall, with communication into the peritoneal cavity. This most commonly follows a blow to the lower abdomen, when the bladder is full.

Intraperitoneal rupture permits an escape of urine into the peritoneal cavity. When injected into the peritoneal cavity very slowly or when there is a sufficiently long interval between large injections, sterile urine does not produce peritonitis. However, the continued flow of urine in moderate or large quantities into the peritoneal cavity does cause peritonitis of serious consequence. Infected urine introduced into the peritoneum obviously contributes to peritonitis.

Extraperitoneal rupture denotes a break in the continuity of the bladder wall in an area which is not covered by peritoneum, thus permitting escape of urine in the perivesical tissues, but not into the peritoneal cavity. This type of

injury is commonly seen in association with fracture of the bony pelvis.

Almost all extraperitoneal injuries of the bladder occur on the anterior lateral bladder wall, rather close to the vesical neck. Urine extravasates to the prevesical space, and gradually invades by way of fascial planes, regions as low as the thigh or as high as the umbilicus.

The seriousness of urinary extravasation has been known for a long time. When sterile urine invades undrained tissues, it causes necrosis, sloughing and suppuration, which if untreated, obviously prove fatal. When urine is infected, the toxic action against the tissues is accelerated markedly.

Combined intraperitoneal and extraperitoneal rupture is most commonly noted in perforating injuries. There is extravasation of urine both into the extraperitoneal and intraperitoneal cavities.

There may be a varied idea of symptoms, depending upon the interval between the accident and the time the patient is observed.

Shock and hemorrhage, constant in major trauma, are usually evident. However if the patient is seen within the first 30 to 45 minutes of the injury, very often these will not be present.

Abdominal pain or pain over the pubis which is of a constant and boring type, are somewhat classical.

An extreme desire to void, but inability to do so is also classical. Some of these patients may be able to void a small amount of bloody urine. Hematuria, in the voided or catheterized specimen is very often seen.

The best method of diagnosis is by cystogram, with opaque medium, combined with urethrography. The medium used for the cystourethrograms, should be a 10 per cent solution of Skiodan, Diodrast, Hyopaque, or Urokon, rather than the 12½ per cent solution of sodium iodine, used for routine cystography. The bladder is catheterized if possible, and the medium is injected through the catheter, the last 25 to 30 cc's being injected as the catheter is withdrawn, then an AP and postero-lateral oblique films are ex-

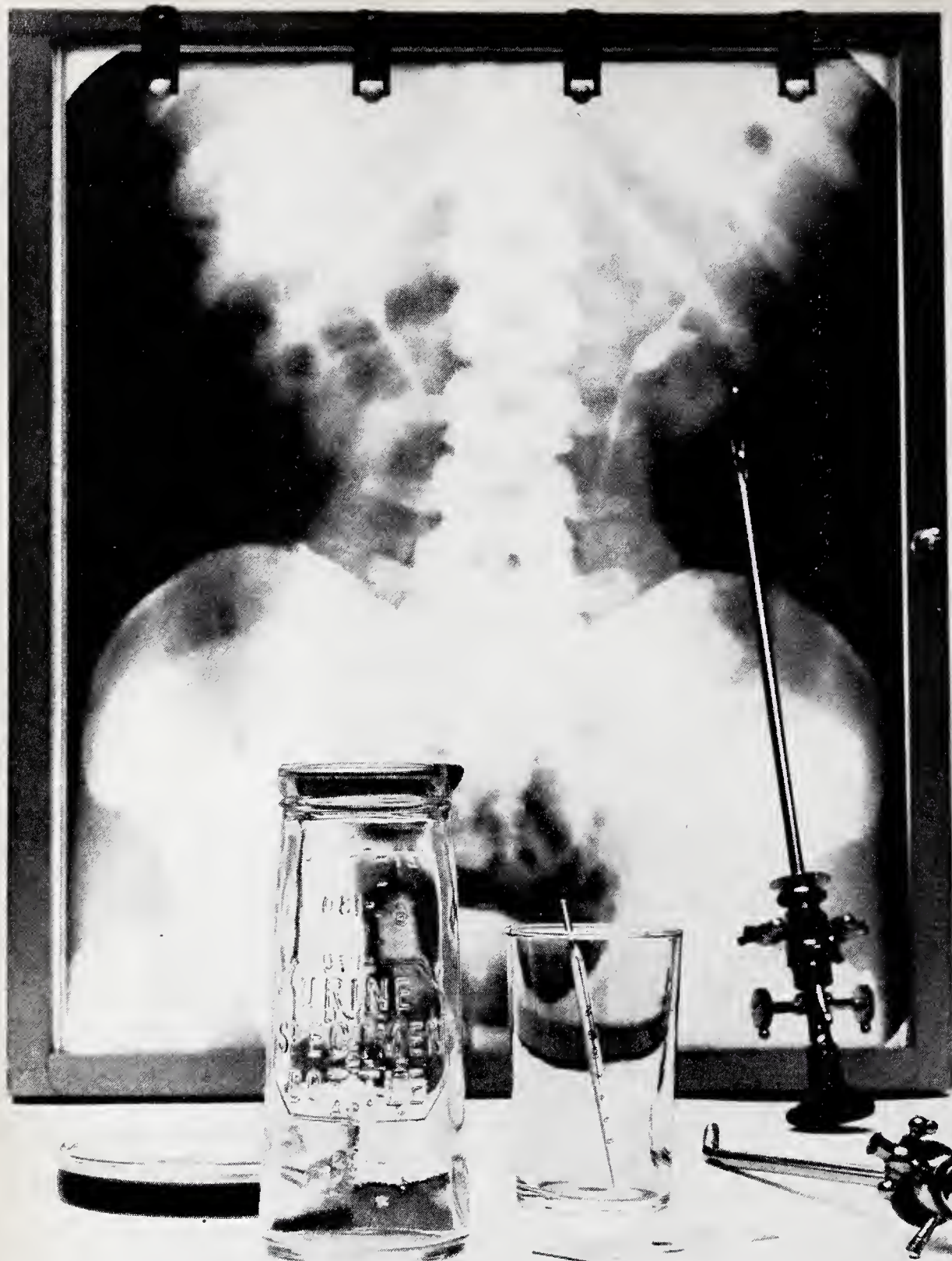
posed. The dye is usually readily seen going outside the confines of the bladder.

Cystoscopy is not recommended as a routine measure for diagnosis of ruptured bladder.

There is a constantly quoted procedure which involves catheterization, injection of a measured quantity of fluid into the bladder, and the appraisal of the amount returned through the catheter. This is mentioned only to condemn it, because many false conclusions can be made in this test. The proximal end of the catheter may be outside the bladder, rather than in it. A volume of liquid outside the bladder may be returned, thus, a quantity larger than the amount injected may be recovered. A blood clot may occlude the catheter, and lead to false conclusions. If x-ray facilities are available, time should not be wasted on this test.

In very few urological conditions, is immediate surgery more imperative than in rupture of the bladder. As soon as shock is controlled, if it's present, preparation for surgery should be made. The most important step is the immediate establishment of suprapubic drainage: with a large (28 to 34F) caliber catheter. Liberal bladder drainage is more important than suture of the perforated area of the bladder. The next most important is wide and thorough drainage of the prevesical and perivesical regions, in the extraperitoneal type of rupture, and, aspiration of urine and blood from the peritoneal cavity in those who have an intraperitoneal rupture. Closure of rents in the bladder should then be made with absorbable sutures such as chromic or plain catgut. Constant drainage by way of the suprapubic tube should be instigated, and every effort may be made to keep this catheter draining freely. At times when there may be separation of the bladder and the urethra, such as is commonly seen with fractures of the bony pelvis, this separation should be closed with the use of a urethral catheter, placed at surgery with pressure on the bulb of the catheter to approximate the two areas.

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Of course good supportive measures should also be given to all these traumatic injuries with wide coverage by broad spectrum antibiotics, until the specific has been ascertained by culture and sensitivities.

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◆ *What's* NEW ◆

Cinefluorography

JOE B. SCRUGGS, M.D.

One of the giant forward steps in the progress of medical science was the discovery of x-ray by Roentgen late in the nineteenth century. Roentgen made most of the basic essential observations concerning this new type of energy within a few months of his initial discovery. There have been great advances, however, in the field of engineering and manufacture of x-ray equipment. One of these has been fluoroscopic image intensification.

It is the purpose of this paper to discuss the place and use of image intensification in radiology today and to review some of the history and some of the basic principles in the production of image intensification and the recording of this intensified image on movie film. In 1941 a radiologist, Dr. W. E. Chamberlain, made this statement concerning image intensification: "In my opinion, it is just around the corner, and, when it comes, it will put medicine and radiology through another revolution not very different from that which followed the advent of roentgenography and present day fluoroscopy at the turn of the century" (1).

Actually the science of producing a light image is not new. Some several hundred years ago Dr. Bacon magnified writing by holding a segment of a glass

sphere over the page of a book. Some three hundred years ago Galileo used a self improved telescope for looking at the stars and moon. With the development of electronic techniques in recent years new systems have been developed which have opened new horizons of possibilities in image intensification. These already have had a wide impact on our society. A system of image reproduction consists basically of a light to electrical transducing stage, an amplifying stage, and a final stage that converts the amplified electron signal back to a set of light signals intelligible to the human eye. Perhaps the most familiar of these is television. In 1953 practical image intensification became commercially available with introduction of the Fluorex image amplifier produced primarily by the Westinghouse Corporation in the United States and by the North American Phillips Company in Holland.

In our present day medical practice there are a number of physicians, other than radiologists, who have fluoroscopic units in their offices to aid in the diagnostic evaluation of their patients. One of the seemingly minor but time consuming problems associated with fluoroscopy is that of dark adaptation so one may see the fluoroscopic screen in some detail in

the near light proof room. The unsatisfactory results of fluoroscopic observation are due to a deficiency of the human eye in observing low levels of brightness. This is shown by comparison of light levels measured in millilamberts. Ordinary room lighting is in the order of 10 millilamberts. The reading of x-ray film is usually done at light levels which may vary from 10 to 1,000 millilamberts. When this is compared with the light emitted from a fluoroscopic screen which is in the order of .001 millilamberts, it is easy to see why visual acuity is so poor. At this level of brightness most all of the vision in the human eye is rod vision. Only coarse detail can be seen at these low levels in fluoroscopy.

This limitation can be removed only by increasing the brightness of the fluoroscopic screen to a level of greater visual acuity. This is sometimes tried by increasing kilovoltage or the milliamperage, or both, in the fluoroscopic apparatus. Increased milliamperage and kilovoltage also are used at times when the physician will not give himself the proper amount of time to accommodate his eyes to this low level of light intensity. Increased milliamperage and kilovoltage do not give increased intensity that enables the human eye to see more detail. This only succeeds in running the output of fluoroscopic tube to a dangerously high level, resulting in over exposure of the patient, as well as the fluoroscopist, to damaging radiation. The modern electronic intensification apparatus has been the result of the efforts of radiologists and electronic scientists and technicians to overcome this problem and increase the brightness of the fluoroscopic screen.

Along with the development of the image intensifier there was also the development of such a unit that would not only allow the physician to see a brightened, intensified fluoroscopic image but would allow the physician to place this image on movie film, simultaneously. Everyone is familiar with the term, cinematography, which describes the production of the illusion of motion with the aid of the motion picture. The term, cinefluorography, has been used to describe

the making of x-ray motion pictures by photographically copying fluorescent images on 16 mm. or 35 mm. movie film. The basic components for any cinefluorographic method are as follows: (1) source of x-ray energy, (2) patient, (3) x-ray beam after differential absorption in patient, (4) fluoroscopic screen (in-put phosphor), (5) intensification device, (6) intensification image (on out-put phosphor), and (7) lens, camera, and film transport.

After emerging from the patient the x-rays strike the fluorescent screen within a highly evacuated glass envelope. Contiguous with the screen is a photoelectric surface from which photoelectrons are released by the light produced in the screen, and they are directly proportional to the available light intensity. These free electrons are then accelerated and focused electrostatically onto a smaller fluorescent screen. The accelerated electrons strike the second screen releasing more light than was released from the in-put screen x-rays. In this intensification process the electrons are concentrated by an electron optical system which achieves an area of reduction of almost one-twentyfifth of the in-put screen. The increase in brightness of the image is the product of acceleration and concentration. The final fluoroscopic image is then several hundred times brighter than the original image produced by x-rays. An optical system is provided which returns the image to the original size for viewing, making possible normal manipulation of the patient and the equipment. All major producers of x-ray equipment at this time produce the image intensifier and provide intensification of the fluoroscopic image from 1,000 to approximately 3,000 times. This image is visible through a mirror system and gives an image which is in the order of five inches up to nine inches in diameter size.

There are, at the present time, three basic methods of viewing the out-put phosphor of the image tube or the intensified fluoroscopic image. First, this is done optically by means of magnifying lens and mirror system, basically as described above.

CINEFLUOROGRAPHY

The second method is that of the cinefluoroscopy. This is accomplished by adding the use of the lens and camera for the photography of the fluoroscopic image and the making of a permanent film reproduction of this image. It is felt by some that more diagnostic information is seen in the film examination than was seen with the straight image intensified fluoroscopy. One reason, of course, is the ability to stop the cinefilm as it is projected after processing. The film can run slowly or fast, or be reversed, so that we can study and restudy many of the images that are present only for an instant in the fluoroscopic examination. In addition to this, there is a permanent record for reference purposes and very little added radiation is produced. The newer types of apparatus have simultaneous mirror viewing for the fluoroscopist while the film is being exposed in the cinecamera.

The third method of viewing the intensified fluoroscopic image is by means of lens and television camera. This image is seen on a normal industrial 10 inch or 14 inch television monitor which enables a group to see the image clearly. This is most desirable in a teaching institution.

There are several advantages in the use of the image intensifier. Undoubtedly, one of the chief advantages is the fact that long periods of dark adaptation are no longer necessary. One may proceed to the fluoroscopic room following film reading or consultation before bright illuminators and still see through the upper abdomen better than with the conventional fluoroscope after 20 minutes of dark adaptation.

In practical use, the usual illumination in the fluoroscopic room is reduced slightly when using the image intensifier. The amount of light may be varied depending upon the desire of the fluoroscopist. The technician can move about freely without bumping into objects and the referring physician can step in and look through the fluoroscope without losing time to adapt his eyes to the dark. In addition, it is much more pleasing to the patient as he is not suddenly plunged into a room of darkness, placed in unfamiliar positions,

with seemingly confused motion, on a table which moves him from an erect position to the recumbent or head down position.

Aside from these factors of light accommodation and patient comfort, there most likely will be less actual fluoroscopic time with the image intensifier than in the conventional fluoroscopic examination. The increased brightness permits the acquisition of the desired information in a relatively shorter period of time. It is easy for many radiologists and most non-radiologist physicians to over rate conventional fluoroscopy when a comparison of fluoroscopic findings is made with the findings of a complete and adequate radiographic film study.

Normal fluoroscopy is usually carried out at 3 to 5 milliamperes at 80 to 90 kilovolts. With image intensification this may be done with as little as 0.5 milliamperes and 80 kilovolts which results in considerable reduction in radiation exposure to the patient and the physician. When this reduced output of the fluoroscopic tube is coupled with the shortened fluoroscopic examination time with image intensification, the reduction in patient exposure to radiation becomes of even greater significance.

While these factors are considered to be definite advantages of image intensification, there are certain disadvantages which should be noted. The expense of such apparatus cannot be overlooked. The hospital or the radiologist who is considering the purchase and use of image intensification must be prepared to spend an additional fifteen to twenty thousand dollars in the x-ray department or office. This can vary, depending upon the specific desires and purposes in the use of such equipment. If the unit is equipped for fluorographic movies there is the necessity of processing and viewing the 35 mm. or 16 mm. cinefilms. This equipment also is expensive and, although automatic and semi-automatic processing units have been developed, additional dark room space is required. It is necessary to have special projection equipment for the study of these films. The fluoroscopic diagnosis

is therefore delayed if the proper study of the cinefilm is done.

The apparatus is considered to be bulky and heavy but more refinements and more compactness of design have helped to reduce this disadvantage. The intensifier is still an additional piece of apparatus to be used in what usually is a crowded radiographic and fluoroscopic examining room. With the modern power assist fluoroscopic tables, however, the size and weight of the intensifier is not a great disadvantage although it may be awkward to use until the physician becomes used to the apparatus.

There is a loss of detail on the cinefilm when compared to conventional large film seriographic studies or single exposure film studies. This disadvantage is one that is accepted as a necessity. Cinefluoroscopy will not replace the radiographic examination itself. With a complete examination, including radiographic film studies, this relative loss of detail on the cinefilm is of lesser importance.

In considering the indications and usefulness of this apparatus, it should be noted that cinefluorography is considered by many to be the most rapidly growing modality in radiography (2). This is particularly true in that it is the most accurate roentgen method for investigating function, physiological phenomena, and pathological physiology. It provides for the study of the radiographic anatomy of organs and systems correlated with their functional changes in shape and content and other changes that occur in adjacent or functionally dependent structures.

Still radiographs record only the image of the organ or part under study at the particular moment of the film exposure. The ability to evaluate abnormal physiology in cardiology, gastroenterology, urology, and the respiratory diseases greatly increases the diagnostic acumen of the radiologist and the attending physician. Because of this there are some who believe that image intensification with cinefluorography will become available to many of the smaller hospitals throughout the country. This will be particularly true where these smaller hospitals have consulting radiologists available.

The greatest use of image intensification in the past has been in the field of gastroenterology. In the gastro-intestinal tract the visualization of a fixed image on a single radiograph or even with a series of still radiographs is not a complete or satisfactory examination. Studies of motion, peristalsis, and of the transient changes in the appearance of the intestinal mucosa are a necessity in the complete evaluation of gastrointestinal pathology or abnormal functional physiology. In the past this has been done almost solely by the radiologist, or the gastroenterologist, and his fluoroscopic screen. With image intensification the radiologist can now record these fleeting or momentary changes which he previously has been able to see only in poor detail. There have been many instances in which changes have been demonstrated on the films taken after fluoroscopy which were unsuspected or at least minimized in the fluoroscopic impression. These changes can now be studied repeatedly by reviewing the cinefilm taken at the time of the fluoroscopic examination. The demonstration of mucosal detail in the intestinal tract is far superior to that with the conventional fluoroscope.

Myelography may be speeded up considerably because accommodation is no longer necessary. The physician who has done the spinal puncture no longer has to wait for his eyes to accommodate to the dark or to wear red glasses during the spinal puncture if he desires to see the fluoroscopic image.

Image intensification in the study of the respiratory system has resulted in a considerable increase in our knowledge about the normal physiology as well as pathological physiology of the trachea and the bronchial tree during bronchographic studies. Studies have been done to relate pharyngeal function to speech and to differentiate normal from abnormal pharyngeal movements. The intensified fluoroscopic image has also aided in the removal of foreign bodies from the respiratory tract as well as in other areas of the body.

In studying the urinary tract, ureteral peristalsis can be studied accurately when

combined with intravenous pyelography. Studies of the uretero-pelvic junction where there are questionable obstructive changes greatly aid in evaluating the degree of obstruction or deformity. The physiology of the urinary bladder can be studied better than ever before. This is especially true in the field of pediatric urology with the evaluation of bladder neck obstruction, reflux into the ureters, diverticulum formation, and ureterocele formation.

Perhaps the greatest use of image intensification with cinefluorography will be in the field of cardiology. This is an ideal instrument for the study of vascular structures, not only in the heart and great vessels, but in the pulmonary vessels, particularly in evaluating pulmonary stenosis, and in the study of peripheral vascular structures. Direct fluoroscopic visualization, associated with cine-movies of cerebral arteriography, provides a continuous sequence of film that will show the filling and emptying of the cerebral vascular bed. This is also useful in periph-

eral venography or arteriography as well as in aortography.

Image intensification has made a great contribution in the field of congenital cardiac lesions in association with cardiac catheterization. Cardiac and pulmonary function laboratories, associated with open heart surgery facilities, are being instituted in many areas across the country.

No attempt has been made to go into any detail in describing the work being done with image intensification and cinefluorography. Some of the general technical features in construction have been presented along with some of the advantages, disadvantages, and clinical uses. Only time will prove or discredit the great potential that this apparatus is thought to have by those who have pioneered the field of cinefluorography.

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Pathophysiology of Diabetic Acidosis and Coma

THOMAS E. BELL, M.D.*

We will begin our discussion of diabetic acidosis with a discussion of the physiological processes involved in the initiation and perpetuation of the state of diabetic acidosis. Following this a method of therapy will be outlined with a discussion of some of the problems involved in treatment of the acidotic patient.

The characteristic defect in diabetes is a relative or absolute insufficiency of insulin manifested by multiple disturbances in the metabolic processes. In the full form of the disease, glucose accumulates in the blood (hyperglycemia), exceeds the renal absorptive capacity and is excreted freely in the urine (glycosuria), carrying with it a large volume of water (polyuria). Glycogen stores, notably in the liver, are depleted. On fasting or controlled feeding it becomes obvious that besides a complete wastage of carbohydrates, glucose is having its origin from non-carbohydrate sources. The evidence that protein can, and in diabetes does, form glucose is conclusive. Present evidence indicates that there is no net formation of glucose from fat, except for its glycerol moiety; however, fat is burned to an excessive degree. The Ketone Bodies (acetone and the two acids, beta-hydroxybutyric and acetoacetic) which are intermediates in the catabolism of fat are well utilized for energy production but are produced in such large quantities as to exceed top capacity; they accumulate and produce ketosis (ketonemia and ketonuria). This condition itself is toxic, and further, because acid ketones are excreted largely as salts, they will, hav-

ing exceeded the capacity of the kidney to form ammonia, cause a loss to the body of its fixed base (potassium and sodium) and thus give rise to acidosis which if untreated results in coma and death.

Now the process involved in the preceding description will be viewed more closely. States of insulin deficiency may be defined as resulting from a lack of insulin, or from circumstances leading to the neutralization of the effects of available insulin. Ineffectiveness of insulin may result from the action of hormonal antagonists, specific antibodies, toxins or enzymes that destroy insulin, or of chemical conditions of the body fluids that inhibit the enzymatic processes in which insulin is involved. Now I would like to present some recent findings of Dr. James B. Field of the NIH who presented his paper "Observations Concerning Humoral Insulin Antagonist During Diabetic Ketosis." Dr. Field demonstrated the presence of an insulin antagonist in diabetic acidosis by using a rat hemidiaphragm preparation. Ordinarily insulin increases the glycogen deposition in the rat hemidiaphragm. A significant decrease in the insulin effect is interpreted as evidence for the presence of an insulin antagonist. In summary Dr. Field was able to demonstrate an insulin antagonist in the sera of some patients with diabetic acidosis. This antagonist behaves chemically like a protein, and migrates electrophoretically with the alpha-1-globulins. It did not appear to be hydrocortisone, growth hormone, glucagon or insulinase. It does not interfere with the binding of insulin to muscle but seems to exert its inhibitory effect after both it and insulin have been attached to muscle. It is thought that this antagonist differs

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*Written while Dr. Bell was a senior medical student on Medicine Service.

from the insulin inhibitor which can be demonstrated in some patients with chronic insulin resistance.

In diabetics, regardless of the mechanism responsible for the increased need, cases of ketonemic acidosis are always initiated by insulin insufficiency. In cases where treatment is well established the occurrence of coma is usually clearly traceable to omission of the usual daily dose of insulin, to injudiciously decreased dosage, or to failure to increase the usual daily dosage as needed during infections or illnesses that lead to increased insulin requirements.

Hyperglycemia may be regarded as incidental to disturbances in the hepatic regulation of blood sugar levels, the result of decreased glycogenesis and increased glycogenolysis rather than a predominant disturbance of the ability of the tissues to burn sugar. Low concentrations of glycogen in the liver may be due to lack of, or ineffectiveness of insulin to promote glycogenesis, to glycogenolytic effects of the adrenal, thyroid, or pituitary hormones, or to starvation. The degree of the hyperglycemia is not closely correlated with other severity indices of coma. Blood sugar levels may be very high in early stages of the development of a diabetic crisis and may fall considerably during coma (without insulin) presumably due to the exhaustion of carbohydrate stores in the whole body.

Hyperglycemia and glycosuria are concomitant factors leading to diuresis but per se are not critical in the chemical pathology of coma. Excessive excretion of electrolytes accompanies diuresis in diabetic acidosis; but glucose diuresis of itself does not necessarily lead to salt deficits except under conditions of insulin insufficiency. Recent studies by Rapport and Company workers demonstrated that when urine flow was greatly increased by loading with glucose (in non-acidotic patients receiving insulin), the excretion of sodium and chloride tended to rise proportionately while that of potassium and phosphorus tended to remain constant. On the other hand, when an insufficient supply of insulin leads to increased cellular catabolism and the re-

lease of intracellular components, an excessive loss of both intra and extra cellular electrolytes in the urine may be expected, regardless of the degree of diuresis. Problems of fluid therapy will be discussed later in this paper in the section on therapy.

Abnormally rapid hepatic ketogenesis is associated with increased glycogenolysis and decreased concentrations of glycogen in the liver. Mutually aggravating factors are operative, inasmuch as glycogenolysis is increased by the state of ketonemic acidosis. The theory of overproduction of ketone bodies in diabetic acidosis is now well established and accepted. It has been shown by Stadie and co-workers that the usual rate of utilization of ketones by the muscles and other extra-hepatic tissues is unimpaired in depancreatized animals. Ketonemia increases rapidly when overproduction exceeds both the capacity of the kidneys for secretion and the rate of utilization of the ketones by the muscles and other peripheral tissues.

Stadie and his co-workers have done much of the work in fatty acid metabolism in diabetes; his recent findings on the origin of ketone bodies will now be presented. As we have mentioned previously the so-called ketone bodies are three in number: Acetoacetic acid, beta-hydroxybutyric acid, and acetone, acetone being the only true ketone. The precursors of the ketones are chiefly the long-chained fatty acids. Certain of the amino acids derived from protein are ketogenic; carbohydrates never yield ketone bodies. Ketogenesis is limited to the liver for all practical purposes. The kidney does form acetoacetate but it is so rapidly oxidized by this organ that no net increase in ketone bodies occurs. The peripheral tissues do not produce ketone bodies from fatty acids. As we know ketogenesis occurs in the normal individual since traces of ketone bodies can be demonstrated in the blood and expired air; however, ketogenesis is markedly increased in starvation and in diabetes.

In the liver fatty acids are broken down by beta oxidation to two carbon compounds which react rapidly with coen-

zyme-A to form acetyl-coenzyme-A. Acetyl-coenzyme-A can then go in one of two directions through the liver: (1) It can proceed through the Krebs cycle for energy production, or (2) acetyl coenzyme-A can condense to the ketone bodies followed by the splitting off of coenzyme-A in consequence no further oxidation of acetoacetic acid occurs, thus giving rise to free ketone bodies in the blood.

Stadie and his group demonstrated the formation of ketone bodies by the depancreatized cat liver to be six times the normal rate. The ketone formation of depancreatized - hypophysectomized cats was practically zero. Compare this data with the rate of incorporation by liver slices of acetate into long chain fatty acids as observed by Brady, Lukers, and Gurin. In the depancreatized cat this incorporation is essentially zero while in the depancreatized - hypophysectomized cat the value is restored to normal. Both sets of data can lead only to one conclusion, namely, that the enzyme systems causing the breakdown of higher fatty acids to acetyl-coenzyme-A from which ketones are formed are unimpaired in the diabetic state, and second, that the enzyme systems catalyzing the synthesis of fatty acids from acetyl-coenzyme-A are impaired. Shaw, Deluri, and Gurin demonstrated that the block in this synthesis was due to the inability of the diabetic liver to convert acetyl-coenzyme-A to butyryl coenzyme-A. They postulated that this might be due to the absence of reduced TPN.

A metabolic acidosis, characterized by a low bicarbonate and a low pH of the blood plasma, results partly from the accumulation of ketones and other acid metabolites, partly from losses of mineral cations that are excreted with ketone acids, phosphates and other anions in the urine; also a relative hyperchloremia often co-exists with a lowered concentration of sodium in the plasma, especially in the latter stages of increasing hemoconcentration. The state of acidosis itself aggravated the course of the metabolic disturbances by multiple effects, directly or indirectly interfering with the

action of insulin and generally accelerating the catabolic processes in all tissues. The hyperpnea that accompanies acidosis involves severe muscular effort, imposing burdens of fatigue and anxiety, and contributes to the development of dehydration by increasing the loss of water vapor in the expired air. It has been observed the respirations increase sharply below a threshold at around pH 7.2 to a maximum of about pH 7.0 but decreasing with lower values as the severity of the acidosis increases, probably owing to the depression of the medullary centers.

Increased tissue catabolism in the diabetic crisis involves the liberation of inorganic phosphates and associated cations (especially potassium) from cells into the urine from whence they are excreted. With the development of acidosis the low pH favors the enzymatic decomposition of the labile inorganic phosphates in the cells. Increased phosphaturia in states of acidosis has been commonly explained as a renal mechanism for conserving cations, for maintaining the alkali reserve in the plasma, diminished tubular resorption of phosphates occurring as an effect of the lower pH on the kidney. Increased liberation of inorganic phosphates from the tissues is probably primary and the more important factor in phosphaturia.

Dehydration in diabetic acidosis results primarily from loss of electrolytes as it does in other conditions in which salt depletion leads to diminished ability of the body to retain water. Data from metabolic studies indicate that the losses are primarily cellular, depletion of extracellular elements occurring as a concomitant secondary effect. In the later stages vomiting (or the accumulation of fluid in a dilated stomach without vomiting) may aggravate the loss of extra-cellular electrolytes, chloride, and sodium. We are all familiar with the progressive manifestations of dehydration with the depletion of total body water, hemoconcentration, diminished circulating blood volume, lowered blood pressure, and shock. Hypoelectrolytemia is found during the development of acidosis while polyuria and polydipsia are concomitant symptoms but the picture may change markedly in

later stages when polydipsia ceases due to coma or vomiting. A rising NPN may indicate inadequate renal function due mainly to lack of water.

A concept of irreversible tissue damage is generally offered to explain the high mortality that is universally found among comatose patients, rising sharply with the duration of coma regardless of treatment. Damage to vital organs may be ascribed to factors of increased catabolism induced by acidosis, involving the liberation of phosphates and mineral ions previously mentioned, to specific histo-toxic effects of the ketone bodies, especially acetoacetic acid, and to interferences with oxygen exchanges leading to tissue anoxia. Tissue anoxia now seems to be the most important factor. Kety and co-workers studies fourteen patients in severe coma, with a mortality of forty-three per cent, and found that the measurement of cerebral oxygen consumption was the only one of many tests performed before or at the start of treatment that had any prognostic significance. They report that in these patients "there seemed to be a critical level for cerebral oxygen utilization of 2.1 cc per 100 grams of brain tissue per minute at or below which consciousness disappeared, compared with a consumption of 3.3 cc in mentally alert normal subjects." With but one exception a cerebral oxygen consumption below that critical level seemed to be incompatible with survival. Acute functional disturbances of the heart and kidneys may be ascribed similarly to the effects of acidosis and of cellular anoxia attending a diminution of the circulating blood volume, hemoconcentration and shock.

Coma, the ultimate and most critical manifestation of the diabetic crisis is the most important of the clinical indices correlated with prognosis. Coma was associated with a 40 per cent reduction in cerebral utilization of oxygen in spite of an augmented rate of cerebral blood and a normal arterial oxygen saturation. The depressed cerebral metabolism can be ascribed both to the acidosis per se and to the ketone bodies probably acting as histotoxic agents.

Now we shall discuss the therapy for

diabetic acidosis. A working diagnosis of diabetic acidosis is made when a 4+ glycosuria and a 4+ ketonemia is found in an acutely ill patient. No other condition known will give both of the above findings. If the reaction of undiluted plasma was 4+ it should be diluted 1:1 with normal saline. For a 4+ reaction only in undiluted sera give 100 units regular insulin. For a 4+ in the first dilution give 200 units regular insulin. For a 4+ reaction in the second dilution the patient is in profound coma and the patient is given 300 units of regular insulin. Of the initial dose approximately $\frac{1}{3}$ is given i.v. and $\frac{2}{3}$ given subcutaneously. For children under 12 the dose initially is approximately $\frac{1}{4}$ that for the adult.

When blood was drawn to secure plasma for your test for ketones blood was also sent to the lab for blood sugar, hematocrit, CO₂, BUN, Na, K. and Cl. These values should give you some idea as to the patient's state of hydration and electrolyte balance.

After the initial dose of insulin is given we should begin our fluid therapy. As a result of hyperglycemia and glycosuria, hyperventilation and the vomiting which frequently occurs in diabetic ketosis, there is usually large losses of intracellular and extracellular water and electrolytes. In most instances these substances are lost in proportion less than their concentrations in body fluids, so that the net result is hypertonicity of the body fluids and cellular dehydration. It has been demonstrated that the hypertonicity is not apparent if only the concentration of NaCl in the serum is considered. Glucose does not enter cells readily and this contributes to the effective osmotic pressure of the extracellular fluid, which must be estimated from the concentration of NaCl plus the osmotic concentration of glucose. In the treatment of diabetic ketosis water and electrolytes must be replaced. Water is needed in excess of that in isotonic solutions to correct hypertonicity and cellular dehydration, as well as the provision for urine and insensible loss which is increased with the hyperpnea of diabetic acidosis. For the above reasons numerous authors recommend hypotonic electrolyte

solutions in diabetic acidosis. To obtain this hypotonic solution many people mix isotonic glucose and saline to obtain a solution of 2.5 per cent glucose and .45 per cent saline. However, in severe diabetic ketosis, when carbohydrate metabolism is at a minimum, glucose is not an ideal vehicle for water. On the choice of a carbohydrate for use in the early treatment of diabetic acidosis, fructose has advantages over glucose. Part of the fructose is utilized when glucose would be excreted quantitatively in the urine. Fructose administered intravenously is removed rapidly from the blood, releasing water. There is not an elevation of blood glucose when adequate amounts of insulin are given. A good regimen to follow is the administration of fructose as a 2.5 per cent solution in 0.45 per cent saline so as to administer an isotonic solution early in the treatment when there is usually hypertonicity of the body fluids, with some salt, but chiefly water depletion. In a patient with prolonged and severe diabetic acidosis with shock, the blood volume should also be expanded with blood, plasma, or colloid solutions. Once the blood sugar has begun to fall, due to the acceleration of carbohydrate metabolism, and hypertonicity has been corrected, more concentrated solutions should be used, such as 5 or 10 per cent fructose or glucose, in order to prevent the occurrence of hypoglycemia.

Now back to our discussion of insulin therapy. In severe degrees of ketosis, when the serum acetone is 4+ in the first and second dilutions, 50 units of regular insulin should be given subcutaneously every 30 minutes until an appreciable reduction of the serum ketones or an increase in the CO_2 is noted. If there is no appreciable change in the ketones or CO_2 after 6 hours of therapy, each succeeding dose of insulin should be increased 25 units until such changes are noted. If the degree of ketosis were mild, that is a 4+ reaction only in undiluted plasma, given 50 units of regular insulin every 3 hours until an appreciable change in the ketone content and CO_2 is noted.

The dangers of a rapidly developing hypoglycemia will be avoided if 1000 cc of

D5W is given i.v. after 6 hours of therapy or, if the patient is able, give oral carbohydrates.

When the clinical condition or laboratory values indicate that the patient is making satisfactory progress the patient should be put on a 4-hour sliding scale of insulin dosage which is outlined below:

- 4+ glycosuria—30 units.
- 3+ glycosuria—20 units.
- 2+ glycosuria—10 units.
- 1+ glycosuria—omit.
- 0 glycosuria—omit and give 20 gm CHO stat.

The level of blood sugar during the first 6 hours of treatment is not considered nearly as good a guide for treatment as the degree of ketonemia. The value of knowing the blood sugar is the assurance that it is not too low. The level of blood sugar is checked every 4 hours to make sure that it is kept well above normal limits until the ketonemia is alleviated. Should the value drop below 250 mgm per cent intravenous administration of glucose should be started to avoid the possibility of hypoglycemia to which these patients are extremely susceptible when the ketosis has subsided, but before the glycogen stores have been replenished. If the patient regains consciousness and is doing well for several hours and then lapses into unconsciousness again an immediate re-check of the plasma for ketones will reveal their absence if hypoglycemia is causing the coma. As seen by the preceding example this simple test for ketonemia is of inestimable value. If the materials for performing this simple test are not readily available, after a sample of blood is drawn for acetone, sugar, and CO_2 , glucose should be given i.v. This will not harm the ketotic patient and will restore the hypoglycemic patient to consciousness.

When the plasma ketones (undiluted) become 2+ or less and the CO_2 is above 35 volumes per cent, if the clinical condition of the patient permits a diet at 6 hour intervals with insulin before each should be begun.

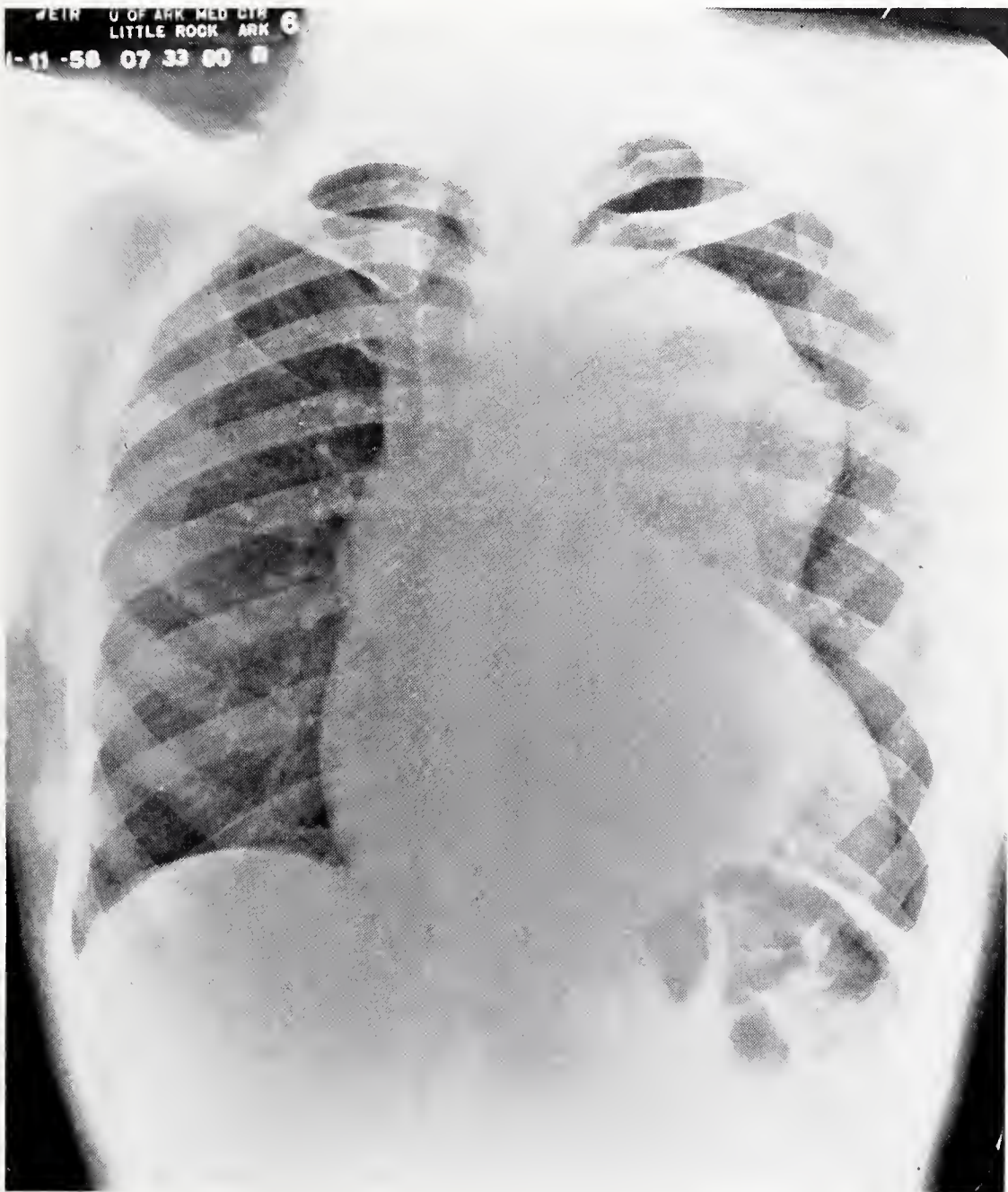
As can be seen diabetic acidosis is the most severe complication that can befall

the diabetic patient, and as soon as the clinical condition of the patient permits a thorough investigation of the patient should be made to determine the cause of the acidosis and appropriate measures should be taken to prevent its recurrence.

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What Is Your Diagnosis?



FOR ANSWER SEE PAGE 305

Arkansas Public Health at a Glance

The problem of venereal disease remains an important public health concern in the state of Arkansas. During the year ending July 1, 1960 there were 11,111 cases of syphilis and gonorrhea reported in the state. This figure excludes known military cases. It would be almost impossible to make an estimate of the unknown and unreported cases.

Statistics on the number of known cases would seem to indicate an increase in the number of cases in the past few years. In fiscal 1957 there were 7,405 cases of syphilis and gonorrhea in Arkansas. There is some reason to believe, however, that this is not a true increase in incidence, but rather a result of better reporting.

There was an increase of 234 per cent in the number of cases of primary and secondary syphilis from 1957 to 1959. Nineteen hundred and sixty showed a slight decrease of nine per cent under the

1959 figure, but still an increase of 203 per cent over the 1957 total. The total cases of gonorrhea were up 96 per cent from 1957 to 1960. Outbreaks of infectious syphilis during 1958 and 1959 involving 79 cases in eastern Arkansas and 119 cases in southern Arkansas suggest that there is also a true increase in incidence in these figures in addition to better reporting.

COMPARATIVE VENEREAL DISEASE
MORBIDITY—FISCAL YEARS 1957-1960

Year	Primary & Secondary Syphilis	Early Latent Syphilis	All Other Syphilis	Gonorrhea	Other Venereal Disease
1957	64	206	2467	4668	16
1958	154	414	3132	4339	17
1959	214	311	2379	5568	13
1960	194	212	1566	9139	39

Some Pitfalls in the Use of Antibiotics

ALFRED KAHN, JR., M.D.

The great array of potent antibiotic drugs has stimulated their extensive use to a point of almost promiscuity in febrile episodes. This wide usage at times carries a penalty. Some patients are generally allergic to penicillin and to the "mycin" family; the former is especially dangerous as it may produce anaphylactic deaths.

Mixtures of antibiotics would seem to offer enhanced antibiotic activity, and at times the use of 2 or more antibiotics simultaneously seems to be more effective than either separately; on the other hand, some combinations of antibiotics are apparently antagonistic and actually are less effective than giving one drug. This has been very ably reviewed by Dowling (J.A.M.A., Vol. 164, p. 44, May 4, 1957) who summarized the previous work of Jowety and Gunnison. Antibiotics are divided into two groups: group I (primarily bactericidal) are penicillin, streptomycin, bacitracin, and neomycin; group II is primarily bacteriostatic and contains chlortetracycline, oxytetracycline, tetracycline, chloramphenicol, erythromycin and carbomycin. In vitro group I members often show synergism, never antagonism; members of group II are neither synergistic or antagonistic to each other but often additive. A group I drug if given with a group II may show synergism indifference or antagonism. This latter effect depends on the drugs and the strain of bacteria. These results do not completely parallel human experimentation, however, synergism has been demonstrated in the treatment of non-hemolytic streptococci, endocarditis, brucellosis, and micrococcus infections. Antagonism was demonstrated in minimal dose schedules with pneumococci meningitis and scarlet fever.

Another matter of indifference by the practicing physician is the blood level of

antibiotics. Antibiotic efficacy depends not alone in selecting the correct drug for a given infection, but also in obtaining an adequate level of the drug in the blood. Fortunately, the prescribed dosage schedules published by the drug firms are usually adequate. The other side of the coin is, that at times, there is cause to worry that a blood level might be unnecessarily high. Finland and his group have reviewed one facet of this in a series of three articles in the Journal of Clinical Investigation (Vol. 38, p. 1487, September 1959). They have studied the persistence of antibiotics in the blood of patients with renal failure and cirrhosis.

As Finland states, "The management of patients with severe renal disease is frequently complicated by infections; these commonly involve the urinary tract, but infections elsewhere are not unusual. Overwhelming infection, particularly with gram-negative bacteria, is often associated with shock and anuria (2) and antibiotic therapy is an integral part of the management in such cases. The persistence of a drug in the blood, once it is absorbed or after it is given systematically, depends on many factors which include: removal by the kidneys, binding to plasma proteins, sequestration in various organs and body compartments, excretion into the bile and feces, detoxification and degradation mechanisms and the inherent stability of the substance; most important for nearly all antibiotics, however, is their removal by the kidneys. Knowledge concerning the fate of antibiotics in patients with impaired renal function is, therefore, necessary for planning therapy so that it will insure adequate blood and tissue levels without undue retention that may be harmful." For example, in patients with severe

renal injury the half life of tetracycline given intravenously was 4 to 5 days as compared to a normal of 6-7 hours. On the other hand, the half-life of chlor-tetracycline (aureomycin) was only slightly prolonged in renal failure, probably due to rapid inactivation in the body. Chloramphenicol (chloromycetin) activity is not prolonged by renal failure; this drug is conjugated with glucuronide and in the presence of severe hepatic disease the rate is slowed somewhat but not sufficiently to warrant dosage changes if the kidney's function is preserved, according to Finland. Other antibiotics studied in the presence of renal failure were: Penicillin whose serum half-life was extended by renal failure from 1/2 hour to 10 hours; the half-life of streptomycin extended to 5 days; erythromycin went from 1 1/2 hours to 3 hours, etc.

All physicians should have a working knowledge of the antibiotics in current use. There are pitfalls as well as advantages in their employment.

Letters to the Editor

October 3, 1960

To the Editor:

I have read with interest and amazement in the August issue of the Journal the copy of the speech by the Honorable Paul M. Butler, a distinguished attorney and former National Democratic Chairman, to the presidents and other officers of state medical associations. I wonder if you would be kind enough to consider the views of one in another profession—a more closely related one—dentistry.

Mr. Butler stated that the Democratic party believes that it costs too much not to be healthy and that it is the basic duty of the government to provide for people those essentials of life which they are unable to provide for themselves.

It is the writers opinion that it does cost too much to provide medical care and other "essentials" when the cost is freedom.

It is no secret that when elected officials can call on the self-reliant, industrious and thrifty minority to provide money for essentials for others, that the list of essentials will grow increasingly longer. It is the worst kind of folly to apply the "it costs too much not to" philosophy to one thing after another until our faith in government, our individual freedom and our fiscal solvency are destroyed. How much good of any kind can an insolvent government, a bankrupt treasury, and a worthless dollar do?

The interest of most voters in any socialistic plan is, in the writer's opinion, based on the hopes of getting more while serving, contributing, and doing less. Should not all our citizens be willing to make any sacrifice necessary to preserve freedom for our children and posterity — or should sacrifice and freedom protection in our time be restricted to the young and healthy on the battle field?

And too, if physicians, and sons, daughters, and other relatives able to work as free people in the richest nation that ever existed on the earth, can't provide medical care for the elderly and as Christians, for those people without sons and daughters, the same people working as a part of a grand scheme characterized by waste, duplication, impersonalness, harassment, inefficiency, mediocrity, and eventual insolvency will do even less in the long run, in the writer's opinion.

Of course, few of us are in perfect health. Under our present system, if one wants to improve his own health (or someone else's) regardless of the level of health enjoyed, and if he has the money (which represents goods and/or services which he has rendered to others and which others have valued enough to pay him for), he goes right ahead and can take as long, and go to as many doctors and hospitals and clinics over the world as he cares to, and can attempt to improve his health to any level of excellence he desires.

The writer prefers this system to one in which the most medical attention is received by those who spend the most time talking with and writing to officials and standing in line and filling out forms and reading bulletins on governmental policy and what they're entitled to and complaining. Why all the worry and hurry about the medical situation when practically all the medical progress since the beginning of time has been made in the past 60 years?

Why all the commotion about the expense of medical care?

People can be grateful to God that they have modern medicine at all or can take it for granted and complain because it costs.

Certainly any service which benefits those who receive it so wonderfully and which costs such a small percentage of one's life time income is not a real cause for concern. In fact, viewed correctly, medical care is not an expense at all but an investment—the wisest and most rewarding investment which can be made outside of the Church.

There is and always will be room for improvement in medicine, of course, but our best opportunities for real and lasting progress in medical service for the aged, and for others as well, lie within the framework of freedom and not in freedom costing expedients and experiments. But of the two systems under which a paternalistic big government "provides" medical care and other "essentials" for the people, which system does the reader believe would be most workable and successful—the socialistic system where citizens are asked to produce and conform according to plans and are allowed to criticize and complain; or the

communistic system where citizens are told to produce and conform and where criticizing and complaining are taboo?

George E. Alcott
Bald Knob, Arkansas

MEDICINE IN THE NEWS

From Association of American Medical Colleges

In 1951 one out of every four faculty members in all U. S. medical schools held a full-time appointment. By 1960, or nine years later, the proportion of full-time to total faculty increased so that one out of every three faculty positions was held by a full-time appointee. These relationships are based on total faculty engaged in teaching, research, and administrative services and includes physician members, as well as doctorates in the basic sciences and other non-physician faculty members. "Full-time" refers to geographic as well as strict full-time.

The trend toward a larger proportion of full-time faculty in medical schools is an important indicator in the continuing effort to elevate standards in medical education. As early as 1912, in the introduction to Abraham Flexner's book "Medical Education in Europe," Henry S. Pritchett commented on the general acceptance of the idea of full-time teachers in the basic sciences and medical sciences, and continued as follows:

"It has not been so generally granted that the clinical teacher must also be primarily a man who devotes his life to teaching and to research. This reform is the next great step to be taken in the improvement of medical education in the United States and Great Britain. . . . With more general acceptance of the view that medical education is **education**, not a professional incident, the conception of the clinical teacher must undergo the change here alluded to. The teaching of clinical medicine and surgery will then cease to be a side issue in the life of a busy practitioner; it will propose to itself the same objects and conform to the same standards and ideals as the teaching of any other subject of equal importance."

From American Medical Association

The Month in Washington

Washington, D. C.—Representatives of the medical and health professions, the federal government and national civic groups are cooperating in development of a program for starting the general use of the Sabin live-virus poliomyelitis vaccine next year.

Shortly after clearing the Sabin vaccine for general use, Leroy E. Burney, M. D., Surgeon General of the Public Health Service, asked 23 non-government organizations to designate members to serve on a Surgeon General's Committee on Poliomyelitis Control.

An Agenda Committee met with PHS officials in Atlanta Oct. 11 and 12 and drafted a basic agenda for a meeting of the Control committee in mid-winter. At the Atlanta meeting, preliminary consideration also was given to administrative and technical problems involved in use of the live-virus vaccine developed by Albert B. Sabin, M. D., of Cincinnati.

The Agenda committee was made up of representatives of the American Medical Association, American Academy of General Practice, American Academy of Pediatrics, Association of State and Territorial Health Officers, Children's Bureau and the National Foundation.

The Sabin vaccine is not expected to be available in substantial quantities before mid-1961.

The chief question of whether the vaccine—which is given orally in the form of pills, liquid or candy—will be administered on individual or mass community basis. The PHS special committee that recommended approval of the oral vaccine said that the community basis would be better.

"Because of the unique nature of live poliovirus vaccine, with its capacity to spread the virus in a limited manner to non-vaccinated persons, the committee cannot make recommendations for manufacture without expressing concern about the manner in which it may be used," the special committee said.

"The seriousness of this responsibility can be illustrated, for example, by the known potentiality of reversion to viru-

lence of live poliovirus vaccine strains, and the possible importance of this feature in the community if the vaccine is improperly used.

The special committee also said attention should be given to administration to special groups, such as very young children, pregnant women, and susceptible adults.

Neither the committee nor Dr. Burney anticipated that the live virus vaccine would replace the killed-virus Salk vaccine used since April, 1955.

Dr. Julian P. Price of Florence, S. C., Chairman of the AMA's Board of Trustees, predicted the live-virus vaccine "will be one more powerful weapon against an ancient and crippling disease." He said that physicians "have conscientiously pushed immunization with the Salk vaccine and now, with this new vaccine, the profession is hopeful that even better results can be achieved."

The AMA has launched a "comprehensive study and action program" to guide Americans in spending their health-care dollars more wisely.

The program is "dedicated to promoting the highest quality health care at the lowest cost." Louis M. Orr, M. D. of Orlando, Fla., chairman of the commission, said that "any barrier that stands in the way of this objective should be removed—immediately."

One of these barriers is money wasted on ineffective non-prescription or over-the-counter drug products, such as vitamins, food fads, and rheumatism and arthritis remedies. AMA's Council on Foods and Nutrition has estimated that much of the estimated \$350 million spent annually on self-prescribed vitamins is wasted.

The AMA is urging physicians to alert their patients and the public to the latent dangers involved in self-prescribing and to the folly of throwing their health-care dollars away on quackeries.

ANNOUNCEMENTS

The Fourth Annual Cardiac Conference will be held in Phoenix, Arizona, on January 27 and 28, 1961 at the Arizona Biltmore Hotel. Speakers for the Symposium include the following: Paul Dudley White, M. D., Clinical Professor of Medicine Harvard Medical School; Robert E. Gross, M. D., Lab. Professor of Childrens' Surgery, Harvard Medical School; W. Proctor Harvey, M. D., Associate Professor of Medicine, Georgetown University Medical Center, and E. Grey Dimond, M. D., Director of the Institute for Cardio Pulmonary Diseases at Scripps Clinic and Research Foundation, LaJolla, Calif.

Further information and hotel reservations may be obtained by writing Leslie B. Smith, M. D., Chairman, 2816 North 16th Street, Phoenix, Arizona.

Under the direction of the Surgeon General of the Army, there is being written, published and distributed a series of volumes entitled, "History of the Medical Department, U. S. Army, in World War II." The authors and editors of these books are among the outstanding medical and medicomilitary authorities in the United States. Of the 48 volumes programmed for the series, 15 have been published and can be purchased at modest cost from The Superintendent of Documents, Government Printing Office, Washington 25, D. C.

FINANCIAL ASSISTANCE AVAILABLE FOR GRADUATE STUDY IN MEDICINE, just published by the Association of American Medical Colleges, can now be purchased from AAMC headquarters. The price is \$2.50. This revised edition is designed to aid both foreign and North American students seeking graduate and fellowship opportunities primarily in the United States and Canada.

MEDICAL SCHOOLS IN THE UNITED STATES AT MID-CENTURY provides factual analysis and evaluation of medical education in the United States

at the mid-point of the 20th century. This document is edited by Dr. John E. Dietrick, Dean of Cornell University Medical College, and Dr. Robert C. Berson, Dean of the Medical College of Alabama. The AAMC is arranging for a second printing in paper-bound copies, and the price of the book, which will be available by late October, is \$4.50. It may be purchased from AAMC headquarters.

The Oklahoma Academy of General Practice will meet at the Biltmore Hotel, Oklahoma City, February 6 and 7, 1961.

The Rocky Mountain Traumatic Surgical Society will meet January 26-28, 1961 in Aspen, Colorado, with headquarters in the Aspen Meadows. Reservations should be made at once with the Aspen Travel Service, Aspen, Colorado for accommodations.

A postgraduate course on Problems of the Newborn Infant will be held January 24-26, 1961 in Augusta, Georgia. Registration should be sent to Dr. Claude-Starr Wright, Dept. of Continuing Education, Medical College of Georgia, Augusta, Georgia.

A new electronic larynx is now available in Arkansas for persons who have lost their voices through paralysis or surgical removal of the vocal cords. This device weighs seven ounces and is designed to fit the user's hand. The user holds it against the outside of his throat and the electronic larynx transmits sound waves into the throat cavity. A finger control enables the user to vary the pitch of his voice over a half-octave range, in order to produce more natural inflections of speech and to emphasize words and phrases.

The electronic larynx was developed by Bell Telephone Laboratories scientists, working in cooperation with the medical staff of the National Hospital for Speech Disorders in New York City.

The device is being sold by Bell telephone companies at a non-profit cost of \$45. Any Arkansas Southwestern Bell

office will give information on availability of the device and arrangements for demonstrations.

Doctor's Pension Plans Get OK From Revenue Service

It is now possible for doctors to get some relief on their income tax. In association with at least two other doctors, they may set up their professional practice so that the income will be taxed as a corporation. Once the association is set up, the doctor is the clinic's employee, and a pension plan can be put into effect. The clinic contributes a certain amount each year to the pension fund for each employee, and it takes an immediate deduction for the total amount of contributions. A retirement plan will mean many more dollars in the pocket if such an association is properly designed. This plan has been approved by the Internal Revenue Service where it was properly set up by a group of Midwest doctors.

The clinic's contribution for retirement is credited to the Doctor's account. While it is his, he pays no tax until he actually receives it. And since it probably would not be drawn out of the fund until retirement, the tax on it will be minimized, shifting the time for paying from the high-income years, to the low-income years. Even if it is taken in a lump-sum on retirement, the tax cannot be more than 25 per cent, as it would be taxed as capital gains. Also, if the pension fund is payable directly to named beneficiaries, instead of to the estate, it is free of estate tax.

From Director of Public Relations,
Prentice-Hall, Inc.

From the Association of American Medical Colleges

Evanston, Ill. — The Association of American Medical Colleges this week began seeking applicants for an unusual foreign fellowship program which gives future American doctors opportunity to study medicine in remote areas of the world.

The program, begun last year as the Smith Kline & French Foreign Fellowships, enables selected medical students,

who have finished either their third or fourth year of training, to benefit from unusual clinical experiences and to practice preventive medicine at outpost facilities in greatly differing societies and cultures.

Dr. Ward Darley, executive director of the AAMC, said application forms and brochures detailing complete information on the SK&F Foreign Fellowships have now been mailed to deans of all U. S. medical schools.

Last year, grants totaling some \$50,000, were made to 29 students under the program. The cash awards are made from a \$180,000 fund provided by Smith Kline & French Laboratories, Philadelphia pharmaceutical firm.

Designed to acquaint American students with health problems not generally seen in this country, and to introduce them to physicians working where facilities are limited, Smith Kline & French Foreign Fellowships have become an established factor in international medicine, Dr. Darley said. It is the only program of its kind.

The 29 Fellows, who will have gone to three continents to participate in the 1960 program, will have a greater realization of the acute need for medical knowledge and care in these more isolated areas, Dr. Darley added.

Fellowships are available to men and women who have completed their junior year of medical school; eligibility will continue through the senior year. Those who have started internships will not be eligible. It is expected that about 30 Fellows will be named in 1961.

Applications for 1961 grants are available through medical school deans and must be returned to the AAMC by December 31, 1960.

An AAMC Selection Committee of prominent medical educators will act on the applications in early February, and Fellows will be announced in early March, Dr. Darley said.

Fellowships provide money for travel costs and living expenses during the time of the student's overseas program. The amount of the grant will vary depending on the proposed program and its location.

During the first year grants ranged from about \$1000 to \$3000.

Students applying for the Fellowships must locate the foreign site at which they wish to study and obtain sponsorship from the medical director at the overseas post in order to be considered for an award.

The average length of time spent abroad by SK&F Fellows is about 12 weeks. This coincides with the length of elective study at most medical schools.

During the first year students studied in such places as Bolivia, Republic of the Congo, Ghana, Southern Rhodesia, India, Thailand and Java. Seventeen of the first year Fellows studied at church supported mission hospitals. The remaining 12 were stationed at government, university and other hospitals and clinics.

A non-commercial, capsule history of medicine—from ancient time to the present—has been produced by White Laboratories and is available for medical and lay group showings. Title of the film is "69.3". This unusual title is derived from the theme of the film, which reveals how medical progress over the years has helped raise our average life expectancy at birth from about 20 years in ancient time to the present 69.3. This is a black and white 16mm film, and runs 13½ minutes. For free bookings, write Institute of Visual Communications, Inc., 40 East 49th Street, New York 17, N. Y.

Obituary

Dr. George B. Fletcher, 72, died October 19 at a Hot Springs hospital. A native of Lonoke, Dr. Fletcher had been a resident of Hot Springs for the past 38 years. He was a member of the Garland County, Arkansas and American Medical Societies and a former chairman of the board of the State Hospital. He was a Fellow of the American College of Physicians. He was president of the Arkansas Medical Society in 1938.

Survivors include his widow, Mrs. Vera

Blood Fletcher; a son, J. T. Fletcher of Selma, Ala.; one brother; one sister, and four grandchildren.

Dr. Gean S. Atkinson, 55, of Blytheville, died September 13, 1960, and services were held in Howard Funeral Service chapel, with burial in Elmwood Cemetery.

Dr. Atkinson had practiced in Blytheville for the past 19 years. He was a member of the Arkansas and American Medical Societies; he was a Mason and a Shriner and a member of the Methodist Church. He is survived by his wife, Mrs. Eunice B. Atkinson; one son, Gean B. Atkinson; his mother; two brothers, Dr. O. L. Atkinson, Hot Springs, and Dr. George S. Atkinson, Oskaloosa, Iowa; three sisters, Mrs. L. O. Wheeler and Mrs. William Bunch of Oklahoma City and Mrs. John East, Miami, Arizona.

from nine southern states and was the first attempt to hold such a camp in a pioneer setting.

Conway Memorial Hospital plans a 15-bed-room addition in the near future. The new hospital building was opened in July, 1957, and during the past year the capacity of the hospital has been overcrowded.

Dr. R. B. Robins of Camden has recently appeared before the Rotary Clubs in both Stuttgart and Little Rock, speaking in behalf of good government. He said "it is your duty and mine as citizens to study issues and candidates."

A small crowd turned out to view the emergency field hospital set up at Dumas in September by the State and Local civil defense organizations. This was the first such display in Arkansas.

PERSONAL AND NEWS ITEMS

Among the surgeons inducted on October 14 in San Francisco as new Fellows of the American College of Surgeons in cap-and-gown ceremonies were **Dr. John B. Jameson, Jr.** of Camden; **Dr. Harley C. Darnall**, Fort Smith; **Dr. Samuel J. Kuykendall** and **Dr. Jerome J. Landy** of Little Rock; **Dr. William R. Meredith, Sr.**, Pine Bluff, and **Dr. Glenn P. Schoettle**, West Memphis.

Dr. William Clinton Talley has joined the staff of the University Medical Center as assistant professor of radiology. He is a graduate of the Duke University Medical School. He did his residency work at the Medical Center from 1956 to 1958 and has since been in the Air Force.

Dr. John Miller of Camden attended a pioneer Campcraft Camp for leaders in Royal Ambassador work, a part of the Baptist Church program, in an isolated wooded area of the Smokey Mountains in East Tennessee from Aug. 29 to Sept. 3. The camp was attended by 24 men

The Mid-Continental Psychiatric Association, an organization of psychiatrists of Arkansas, Missouri, Kansas, Oklahoma and the states bordering them, met at Hotel Sam Peck, Little Rock, in September. Approximately 250 psychiatrists attended.

Dr. Merrill Grayson is new head of the Division of Ophthalmology at the University of Arkansas Medical Center in Little Rock. He succeeds **Dr. Philip P. Ellis**, who has transferred to Colorado.

Dr. Grayson, 40, who was doing intern work at the early age of 21, comes from Indiana University Medical Center where he was Assistant Professor of Ophthalmology. He is a graduate of New York Medical College (1941), interned at City Hospital in New York and obtained his residency training at Bellevue Medical Center, New York.

He is certified both in ophthalmology and ear-nose-throat practice, but has confined his work to ophthalmology. He was in private practice as an ophthalmologist in New London, Conn., 1948-53, before entering the academic field. His academic career started after serving as

FEATURES

ophthalmologist for the 3rd Air Force in England from 1953-55.

He is a diplomate of the American Board of Ophthalmology and American Board of Otolaryngology, examiner for the Ophthalmology Board, a fellow of the American Academy of Ophthalmology and Otolaryngology and American College of Surgeons.

Contributors to the American Medical Education Foundation from Arkansas during September 1960:

R. Murphy, El Dorado	\$10.00
C. W. Parkerson, Hot Springs	10.00
David Yocum, Jr., El Dorado	15.00
Mrs. Paul Gray, Batesville	40.00
Mrs. A. J. Forestiere, Harrisburg ..	10.00
Mrs. G. R. Farris, Little Rock	10.00
<hr/>	
\$95.00	

Proceedings of Societies

The First District Medical Society met in Jonesboro, September 22nd. The program was comprised of talks by Dr. Harold B. Boyd, Memphis, Tennessee; Dr. Herman E. Alston, Jonesboro; Dr. Purvis Milner, Memphis, Tennessee; Mr. W. T. Stover, Little Rock; Dr. Deane Wallace, Little Rock. The Ladies Auxiliary was entertained by local doctors' wives.

♦ NEW MEMBERS ♦

A new member of the Pulaski County Medical Society is **Dr. Charles H. Barnes**. He is a native of Nashville, Tennessee, and obtained his preliminary education at the University of Arkansas from which he received a B.S. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1952. Dr. Barnes served three years in the USAF as Flight Surgeon in the Canal Zone. He

is a resident in Surgery at the University of Arkansas School of Medicine.

Dr. Frank E. Morgan is a new member of the Pulaski County Medical Society. He is a native of North Little Rock and received his preliminary education at the University of Arkansas from which he received a B.S. degree. He was graduated from the University of Arkansas School of Medicine in 1953. Dr. Morgan's specialty is Obstetrics and Gynecology. He holds the position of chief resident-instructor at the University of Arkansas Medical Center.

Woman's Auxiliary

The University of Arkansas Medical Center Auxiliary has expanded and reorganized to better do its work with the Medical Center. It meets on the third Friday of September, January and May; its board meets each month. In September the Auxiliary marked a service milestone when Nelson Evans, administrator of the Center, presented the first Hospital Volunteer Service Pin, given for 100 hours of work completed within one year by volunteers serving either within the hospital or working for the direct benefit of the hospital. Volunteers who received pins are Mrs. H. A. Anderson, Mrs. Lee Bransford, Tom Butler, Mrs. S. J. Fields, Mrs. Masauki Hara, Mrs. Ben Heller, Mrs. L. N. Judah and Mrs. N. W. Quick.

Auxiliary officers are: Mrs. William G. Reese, president; Mrs. F. D. Lawra-son, first vice president; Mrs. Joe Clark, second vice president; Mrs. Roscoe Dykman, recording secretary; Mrs. Stanley Mittelstaedt, treasurer, and Mrs. Nelson Evans, parliamentarian. Directors are Mrs. Mason G. Lawson, Mrs. Masauki Hara, Mrs. Carl Duffy, Mrs. Gordon Oates, Mrs. Carey Stabler, Mrs. Sam Plant, Mrs. S. J. Fields, Mrs. Alan Davis, Mrs. Byron House, Jr., Mrs. H. N. Marvin and Mrs. Hoyt Choate.

Book Reviews

AIDS TO THE DIAGNOSIS AND TREATMENT OF DISEASES OF CHILDREN. F. M. B. Allen, M.D. The Williams & Wilkins Co., Baltimore. Pp. 302. 1957. \$3.00.

This handbook condenses a great deal of information into a very small amount of space. The niche for which this book is intended is a little difficult to comprehend. It perhaps best might be described as a medical student's handbook which could be carried in one's pocket. The practicing general physician might find this of interest. The information in the book is well selected and beautifully condensed. AK

CLINICAL ENZYMOLOGY. Gustav J. Martin, Sc.D. Little, Brown & Company, Boston. Pp. 230. \$6.00. 1958.

The general physician instinctively veers away from a book on enzymology. On the other hand, the clinical application of the field of enzymology is considerable and interestingly presented. Perhaps the most interesting chapters in this book concern the parenteral use of enzymes in medicine and the diagnostic use of enzymes. The biochemistry of enzymes is not of great interest to the average practitioner. As a reference book simply written on a complicated subject, this text is heartily recommended. AK

SYNOPSIS OF PATHOLOGY by W. A. D. Anderson, M.A., M.D., F.A.C.P., F.C.A.P., Professor of Pathology, University of Miami School of Medicine; Director of Pathology Laboratories, Jackson Memorial Hospital, Miami, Florida, Fifth Edition, with 414 Text Illustrations and 4 Color Plates, 876 pages, published by The C. V. Mosby Company, St. Louis, 1960.

The reviewer finds this synopsis of pathology difficult to justify. It is well written and adequately illustrated, but it does not, in the reviewer's opinion, fulfill a particular need. There is no such thing as a short cut to pathology. Actually, this synopsis is 876 pages long and, as such, hardly qualifies as a small book, and yet it is too incomplete to be an adequate textbook. The information contained in the book is well presented and easy to read. This book is not recommended because it does not seem to fulfill any type of teaching or reference mission. AK

ANATOMY, A Regional Study of Human Structure, by Ernest Gardner, M.D., Wayne State University, Donald J. Gray, Ph.D., Stanford University, and Ronan O'Rahilly, M.Sc., M.D., Wayne State University, Illustrated, pp. 999, published by W. B. Saunders Company, Philadelphia and London, 1960.

This textbook of anatomy is well written and well illustrated. The text is clear and concise. It is easy to read. Perhaps it would be advisable to include more drawings and it might be said that this book is not quite as all inclusive as other current textbooks of anatomy. For a shortened course in anatomy, this book is certainly adequate. For the more serious students of anatomy perhaps a more detailed text would be advisable. AK

Answer to What Is Your Diagnosis?

AORTIC ANEURYSM PROBABLY SYPHILITIC

X-RAY FEATURES: There is marked cardiac enlargement, particularly involving the left ventricle, and a very large rounded and lobulated dilatation of the aorta in the region of the arch and proximal descending portion.

CLINICAL DATA: 48 year old colored male. History of previous antisyphilitic treatment about twenty years ago. Several episodes of congestive heart failure during the past two years. Physical examination showed aortic systolic and diastolic murmurs.

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

Control of tuberculosis is now within our grasp if it is regarded as important enough by leaders in public health. Prevention of infection, treatment of the infected individual, will accomplish it.

Despite substantial advances in diagnosis and therapy of tuberculosis as a disease, the basic problems of tuberculosis control have remained relatively unchanged over the years. The magnitude of the problem of control has changed, but its nature is the same. Prevention of infection with its consequent disease and death is still the goal in the United States, and no short cuts to this goal have been discovered. The old road of isolation of the infected, plus treatment and education of the patient and his contacts to minimize the spread of infection is still the highway to the elimination of tuberculosis as a public health problem.

NEW INFECTIONS STILL OCCUR

There is good evidence that new infections in the United States have been sub-

Donald A. Trauger, Division of Research & Statistics, June 29th, 1960.

stantially reduced in number and in rate. There is equally good evidence that new infections still occur in most parts of the country. There is even evidence that the areas where the number and rate of new infections is greatest can be predicted. At the moment infection takes place, the continuance of this preventable, communicable and chronic disease is assured.

What seems worth wondering about is why there is so little concern about this situation. Do we reserve all our moral indignation about the resigned or callous attitudes toward disease and death for far-away places that we can designate as underdeveloped? What are the things we value more highly than the prevention of a disabling and deadly disease we know to be preventable? These, of course, are slanted questions.

Actually, it does not seem appropriate for official agencies and voluntary associations paid by the public to control tuberculosis to take a detached attitude in this matter. Can such agencies be satisfied with anything less than complete control? Why this indecision?

AREAS OF INDECISION

Some points of indecision about tuberculosis control are easily discernible:

1. The belief that although tuberculosis is a communicable disease, it is not so communicable that isolation of all cases is deemed a necessity. The risk of the spread of tuberculosis is more tolerable than infringement of individual liberty.
2. The belief that the interests of the practicing physician are paramount to the public's interest in tuberculosis control. How many health departments can count upon regular verification that the public interest has been served in connection with cases under the supervision of private physicians?
3. The belief that the effort required for keeping track of the patient as he moves from suspect to diagnosed case and from one form of treatment to another isn't worth the effort.
4. The belief that the cost of tuberculosis control should be borne by the patient if at all possible.
5. The belief that tuberculosis needs to be controlled only in persons with legal residence of various public health jurisdictions.

6. The belief that care (or neglect) of tuberculosis is cheaper than tuberculosis control.
7. The belief that control is undemocratic, inhumane, bureaucratic and unneeded.
8. The belief that patients must accept hospital treatment or be dismissed from health department concern.

There are a few of the most common points of indecision about tuberculosis control. Undoubtedly, many people are infected each year by people who do not know they have tuberculosis in a communicable stage, others are infected by people whose doctors know they have tuberculosis but the health department does not, and still others are infected by persons who have been reported to the health department as tuberculous. When infection results in the last two types of situations, the health department or the medical profession has failed. If we believe in health department control of tuberculosis, each case of medical profession failure is also a case of health department failure. When infections result from exposure by a person who does not know he has tuberculosis, it is appropriate to ask why he did not know. If he was ever known to the health department or a physician as a case or as a suspect or as a contact, can we claim infection was unavoidable?

ELIMINATION OF TUBERCULOSIS POSSIBLE

Experts now believe we could eliminate tuberculosis, not by waiting for it to burn itself out but by the use of widespread chemotherapy as a public health measure. They believe this prospect of elimination may wane if not pursued promptly and vigorously. The challenge is whether we can accomplish this without more control and without coming to decisions about matters which have impeded control in the past. Briefly, it comes to this—tuberculosis can be controlled if it is regarded by leaders in the field of public health as important enough. In a specialized society preoccupied with many other concerns, vigorous leadership is required. Leadership which waits for a clear, clarion demand for action from the man in the street simply isn't leadership these days and accomplishes little. Public health leaders must lead.

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Head Injuries

WILLIAM S. COXE, M.D.*

In the management of head injuries, one must bear in mind that all of the cranium and its contents may be damaged singly or together. This may involve the scalp, bone, meninges, the brain and its blood vessels, as well as cerebrospinal fluid spaces. Although only one of these elements may be obviously injured when the patient is first seen, one must be constantly alert for evidence of changes that may involve these structures, either quite soon after the injury, or days later. The greatest concerns in this respect are increased pressure and infection. It is apparent to all physicians that not only should the coverings of the nervous system and its contents be thoroughly evaluated, but all other parts of the body examined for concurrent injuries which may be of more urgent significance than those involving the nervous system.

Of first importance in the management of such patients is the procurement of an accurate history, whenever possible. Knowledge of the mechanics of the injury itself will help greatly in determining the sort of brain injury which has occurred. For example, one should ascertain whether the blow was from a small object, such as a hammer or a missile striking a stationary head, or whether the head was rapidly decelerated against the sidewalk or dashboard. The former may inflict severe local damage to the skull, scalp, and brain with relatively limited general brain damage. Conversely, wide spread cerebral and brain stem injury may follow the blunt trauma, with contusion of frontal and temporal lobes, and possibly, laceration of the brain stem. Inquiry should be made of the patient and his friends or relatives about whether

or not consciousness was lost, its duration, and whether there has been a change in the level of consciousness, speech, ability to move the arms and legs, etc. These factors may be critical in the evaluation of some of the physical and neurological findings during the succeeding hours and days.

Upon examining the patient in the emergency room, vital signs should be recorded immediately and a graphic record kept at frequent intervals. Shock is rarely encountered in head injuries but diligent search for other causes should be made if it is present. Blood transfusions should be given if indicated. The presence of blood or spinal fluid drainage from the nose or ears should be noted in particular. If the patient is conscious and co-operative, a complete neurological examination should be recorded. If he is comatose, pupillary size, reaction, extremity movement to pain, and reflex activity can usually be evaluated by gross tests. The airway may be partially obstructed by a lax jaw and tongue with pooling of blood and saliva in the nasopharynx. Its patency should be immediately established, either by positioning, suction, an oral airway, or a tracheotomy performed. An already contused brain will become even more edematous from hypoxia and venous obstruction. Under no circumstances should mydriatics be instilled into the eyes in order to observe the optic discs or retina, since great confusion may result in the evaluation of pupillary size and reaction during subsequent observation. No opiates or sedatives should be administered for obvious reasons.

SKULL FRACTURES

In any attempt to classify head injuries, one must realize that all such categories

*From the Division of Neurosurgery, Washington University School of Medicine, St. Louis, Missouri.

may overlap and coexist in any one patient. The most important aspect of head trauma relative to the mortality, morbidity, and neurological deficit, is that resulting from brain damage, the skull being of secondary importance. However, it is useful to classify skull fractures, since some, by their nature and location, require immediate surgical intervention, or serve to heighten ones index of suspicion for an underlying or developing hematoma.

Simple Fractures

A simple *linear fracture*, in itself, requires no treatment. If it crosses the squamous portion of the temporal bone, the possibility of extradural hematoma is more likely and constant re-evaluation of the patient is required. Similarly, fractures crossing the transverse sinus or extending into the foramen magnum may be associated with posterior fossa hemorrhage, though such lesions are rare.

Simple comminuted or depressed fractures may require elevation if there is significant depression, particularly if they overlie important motor or speech centers in the frontal, temporal, or parietal regions. The dura is frequently torn in such injuries and surgical treatment will help prevent scar tissue formation which may produce seizures at a later date. If the dura is not torn, it has been our practice to open it, for at times, a subdural hematoma will be found, or an area of contused brain revealed, which should be removed.

Compound Wounds

Before proceeding with a discussion of compound fractures, mention should be made of the *simple scalp laceration*. It should be reiterated that it deserves the care and attention of lacerations occurring anywhere on the body. It should be thoroughly cleansed, widely shaved, and copiously irrigated, followed by meticulous repair. An occasional case of osteomyelitis of the skull, subdural empyema, or brain abscess has been seen when such lacerations were ignored or treated carelessly.

Principles of wound care observed in the treatment of *compound skull injuries* are identical to those governing the treatment of such wounds anywhere else. Meticulous surgical debridement is of the utmost importance since the consequences of inade-

quate therapy of compound head injuries are disastrous. Early primary treatment is, of course, desirable, but if facilities are not available, experience has taught us that the patient can usually tolerate transfer to a hospital equipped to carry out this plan of attack. In the case of missile injuries, it is imperative that all bone fragments and foreign material driven into the brain be removed. Retained bone fragments and foreign bodies are the most frequent causes of cerebritis and/or abscess formation. If the missile lies at a distance from the point of injury, it is not usually necessary to trace or extend the debridement to it, since infection does not usually develop about these. After complete hemostasis and debridement has been accomplished, the dura is carefully closed. If portions are missing, then grafts of pericranium or fascia should be used. Pre and post-operatively, the patient is placed on massive antibiotic therapy, but these agents in no way lessen the necessity for thorough surgical treatment.

Basilar skull fractures, in which there is drainage of blood and spinal fluid from the nose or ears, are treated only with antibiotics and bedrest. No manipulation of the external auditory canal or nasal passages should be made since the introduction of bacteria may be facilitated. The ear may be covered with a sterile dressing until drainage ceases. This usually occurs within 48 hours, but in an occasional case of rhinorrhea, spinal fluid leakage may be quite prolonged. Repair of the dura through a frontal craniotomy is carried out should this occur.

INTRACRANIAL INJURY

Next, damage to the intracranial contents should be considered. This is of primary importance in all head injuries whether or not there is fracture of the skull. The brain injury may be trivial, e.g., a concussion, or immediately profound, as is seen with midbrain contusions or lacerations. Nerve tissue damage may occur gradually from a compressing hematoma following vascular injury. Again, it should be emphasized that several conditions may exist at any one moment or a spectrum of pathological changes may follow in time.

Cerebral concussion, by definition, is only a brief loss of consciousness which

requires no specific therapy. However, any patient experiencing a period of unconsciousness should be carefully observed for several hours, regardless of the fact that he may be alert, lucid, and neurologically normal when first examined an hour or so after injury. Vital signs should be recorded at frequent intervals and the patient should be repeatedly aroused, examined, and pupillary size noted. The development of a slight bradycardia, a slight elevation of blood pressure, increasing obtundity, a diminished abdominal reflex, or an extensor toe response, may be the only warnings of impending, rapid hemiplegia or coma, due to a rapidly developing *extradural* or *subdural* *hematoma*. However, there may not be a classical history of a period of unconsciousness, followed by a so-called "lucid interval", with subsequent increasing lethargy. The blow may be trivial, producing no interference with consciousness whatsoever, or the patient may never regain consciousness from a severe initial injury. If trivial, the patient may complain of headache and nothing more, as is illustrated by the following case.

Recently, a 27 year old male construction worker was admitted to the hospital shortly after being struck on the head with a two-by-four. This produced a laceration of the scalp in the left parietal region, but he was not rendered unconscious. He reported to a dispensary where he was examined by a surgeon who considered repairing the laceration in his office. The patient complained of headache and appeared to be very slightly lethargic, so that his doctor, being somewhat pessimistic about such injuries, referred him to the emergency room of Barnes Hospital for further examination. About one hour later, upon arriving at the hospital, he appeared confused, lethargic, and had developed a right hemiparesis associated with a dilated right pupil and a right Babinski sign. His pulse rate was 56. He was operated upon within 45 minutes and a small extradural and large subdural hematoma were found on the right side. Following surgery he made a complete recovery.

Contusion and *laceration* of the brain, with or without the presence of hematomas, may be followed by extensive cerebral

swelling, the exact mechanism of which is not known. The majority of such patients will improve with the maintenance of good respiratory exchange and moderate limitation of fluid. If brain edema increases continuously, decompensation will result from hypoxia of brain and medullary centers. The administration of hypertonic solutions may be of value and recently, we have been utilizing 30% urea in a few such cases. However, one must caution against the indiscriminate use of such agents. If the cause of the decreasing level of consciousness and decompensation is not brain edema alone, hypertonic solutions may only serve to further shrink the brain away from an expanding hematoma.

Many patients with severe contusions or laceration of the brain may be immediately unconscious from the moment of injury and assume a decerebrate posture from the outset, with legs hyperextended, the arms being rigidly extended and internally rotated, or tightly flexed at the elbows. Again, surgical therapy is usually of no value, but hematomas may develop. Recently, we and others have been instituting hypothermia at the time of admission with the hope that edema will be minimized, and the metabolic needs of the brain reduced. These patients usually require tracheotomy, humidified oxygen, and meticulous nursing care to prevent bed sores. Gastric feeding is begun after a few days, or when the condition has stabilized. Although such patients may appear hopelessly incapacitated at first glance, a number of them will gradually improve and some months later it may be difficult to detect any neurological abnormalities.

Brief mention should be made of *subacute* and *chronic subdural hematomas*. These usually result from tearing of veins bridging the space between cortex and the longitudinal sinus and may follow mild or severe head trauma. Symptomatology may include a spectrum of neurological changes, developing from a few days to months after injury. Subtle personality changes, increasing lethargy, memory loss, headache, occasional weakness, and seizures may come and go, making a diagnosis extremely difficult on clinical grounds alone. Occasionally, the diagnosis may be made only by performing carotid angiography, or by making exploratory burr holes. Usually,

HEAD INJURIES

drainage through an enlarged burr hole is sufficient, but should the brain fail to re-expand, craniotomy should be carried out, with removal of inner and outer mem-

branes. If carotid angiography has not been done pre-operatively, then bilateral trephination should be done since hematomas frequently occur on both sides.

Virilizing Tumors of the Ovary*

EDMUND R. NOVAK, M.D.**

Of the many different varieties of lesions that may arise within the female gonad there is little doubt that the virilizing tumors, if uncommon, are the most spectacular. The gradual transition of a delicate chorus girl into a burly line backer of the Baltimore Colts is an exaggeration perhaps, but certainly typifies the bizarre aberrations incurred by certain androgen secreting tumors. Indeed, my late father used to say that thorough study of the performers at any carnival or circus side show would be apt to produce prime examples of many types of endocrine disorders, perhaps including certain species of the so-called functional or "special" ovarian tumors. He was also quick to add in his facetious manner that he would not dare to extend routine pelvic examination to sword or flame swallowers. However, it was his own feeling that not a few of the so-called "half-men—half-women" or bearded ladies might harbor an ovarian growth responsible for the unusual stigmata.

There are several different varieties of ovarian tumors capable of androgenic function, which may give rise to clinical virilism. Before even enumerating these, however, it would seem important to lay down a few fundamentals in regards the embryological background of the ovary, for this is of prime importance in understanding the histogenesis of these tumors. There is considerable difference of opinion among embryologists in regards early ovarian development, but the following seems accepted:

The gonad arises from the ventral surface of the mesonephros (Wolffian body) as the primitive genital ridge which may ultimately evolve as testis or ovary. Indeed in early fetal life it is impossible to distinguish what the future sex of the gonad will be. There is an initial "neutral" stage, consisting essentially of germinal (the primitive coelomic) epithelium superimposed on underlying mesenchyme, but in the latter the so-called "sex cords" appear

in the early weeks. Whether these arise from mesenchyme or invaginating coelomic epithelium is uncertain, but they are of mesodermic origin.

If the fetus is destined to be a male, (and the outcome is determined at fertilization in accord with the sexual chromosomal pattern) the sex cords continue to differentiate into tubules with Sertoli and Leydig cells. In the female there is a temporary early trend towards this pattern, but if the ultimate destiny is female, there is no continuity with the mesonephros. Indeed, there occurs a regression of the tubular elements, although certain remnants may persist. However, over the course of several weeks the mesenchyme become differentiated into clusters of granulosa cells which are the framework of the female sex cells, and with them form the follicular apparatus. The actual origin of the germ cells is obscure but is probably from the hind gut.

It is believed that certain of the endocrine tumors arise from cells that have persisted from early embryonic days. At the same time we would add that the morphology of some of these tumors is often confusing and complex. While cell appearance and general pattern should be the criterion for the diagnosis of any tumor, the fact remains that this is often a very real histological problem, even to expert pathologists.

It is thus no wonder that the average pathologist will seek any assistance available from the clinical data, especially if there is an apparent evidence of overt endocrine effect. However, there is a growing belief that this is often of only limited assistance, for certain tumors, histologically of classic type, seem to exert a heterogeneous endocrine influence. By the same token, it would also appear that certain tumors may exhibit a sort of bisexual effect so that such virilizing features as hirsutism, acne, and clitoral enlargement may co-exist with what has always been regarded as an estrogenic effect, namely uterine endometrial hyperplasia.

In discussing the so-called functioning or

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"special" ovarian tumors of dysontogenetic nature, it is not merely in jest that I have often speculated that ten years ago I felt I knew a great deal about them, for there was then a fairly clean-cut arrangement. Early undifferentiated sex cells could be expected to produce a neutral type of hormonal pattern as characterized by dysgerminoma, tumors arising from the anlagen of male-directed cells as a transitory phenomenon of the usual ovarian development might be expected to incur virilization, while tumors of theca or granulosa type could readily produce estrogen effects. At the present time, due to a host of publications and schemes of tumor classification in regards this group, there is hopeless confusion. Currently we have Gunnar Teilum's homologous pattern of ovarian and testicular tumors, with, however, various tumors from primitive testicular elements in the ovary producing estrogen effects. Certain tumors, seemingly typically theca or granulosa in type, have been suggested as being androgenic in nature by Shippel, Leventhal, and more recently Nokes. McKinley has stressed the basic estrogenic nature of granulosa and theca cells, but has added that "under certain conditions these are capable of conversion into androgen producers".

Is it any wonder that confusion reigns, and for a real comprehension of these exotic steroidal tumors it would appear that a complete ignorance of the recent literature might facilitate at least an adequate working hypothesis. Our own idea is based on the tenet that granulosa and theca cells as well as testicular sertoli cells are generally estrogen producers, and that Leydig cells, hilus cells and adrenal cells are apt to be virilizing. While we recognize that certain admixtures of these cells occur, the net endocrine effect appears to be a quantitative one of estrogen or androgen effect.

It is of paramount importance to emphasize the extreme difficulty in distinguishing certain cell types; for example what Gunnar Teilum might call a feminizing androblastoma (of Sertoli cell origin), others might interpret as a tubular granulosa cell pattern. Perhaps we are wrong, but at least our concept is based on a simpler less complex type of classification.

At the same time we are beginning to recognize the possible bisexual effects of certain tumors and appreciate the close chemical relationship and possible conversion of some of the steroids. Why then should we be surprised to find a morphologically androgenic type of tumor exerting an estrogenic effect?

ARRHENOBLASTOMA

Probably the most common type of masculinizing ovarian neoplasm is the so-called arrhenoblastoma, although it should by no means be considered a frequent type of ovarian tumor. A comprehensive report by Javert in 1951 notes only 121 such cases, but a more recent review by Johnston et al. notes 145 reported cases, with a malignancy ratio approximating 20%.

HISTOGENESIS

We have already indicated the uncertainty regarding the histogenesis of the lesion, although Pick's original concept was that it originated from an ovotestis. Meyer recognized the more undifferentiated and almost sarcomatoid nature of some of these lesions, and he emphasized the fact that arrhenoblastomas were not always associated with masculinization. He likewise indicated a possible origin from certain remnants of male directed cells that are apt to be persistent in the region of the ovarian hilum, but (as noted previously) if the resultant tumor contains an excess of Sertoli cells, an estrogen effect may occur. If, however, there is a preponderance of interstitial (Leydig) cells, the resultant endocrine effect is towards masculinization, and it is a fact that clinical virilism is rarely seen in the absence of these typical Leydig cells. It is somewhat paradoxical that the virilizing Leydig cells are rarely found in the well-differentiated form of arrhenoblastoma (Pick's or testicular adenoma) so that this particular pathology entity is associated with the clinical form of masculinization only occasionally.

Actually a few cases are believed to be associated with an estrogen effect, from Sertoli cells but are frequently categorized as folliculoma lipidique or a lotzinized type of granulosa cell tumor, although in Teilum's classification they might be called a feminizing type of androblastoma, com-

posed primarily of estrogen-secreting Sertoli cells. Actually this discrepancy might serve to illustrate the extreme difficulty in distinguishing between certain forms and patterns of granulosa-theca and Sertoli-Leydig types of tumors.

GROSS PATHOLOGY

The arrhenoblastoma is rarely a large tumor, although a few cases have been reported the size of a fetal head. Less than 5% are bilateral, and the tumor is generally smooth walled, grayish-yellow in color, and not adherent. Cross section reveals a pultaceous appearance with cystic and hemorrhagic degeneration a frequent finding.

HISTOLOGY

A tremendously variegated appearance may present even in different areas of the same tumor. A well-differentiated tubular adenomatous pattern may be found with a considerable resemblance to the Sertoli cells in seminiferous tubules. This so-called testicular adenoma is a far cry from the highly complex sarcoma-like pattern that may be found in the poorly differentiated varieties of tumor with only an occasional cord or tubule to furnish a clue to the proper diagnosis. The presence of lipid laden interstitial cells is more frequent with the less differentiated form of arrhenoblastoma, although more frequently associated with clinical virilism. Needless to say, all intermediate forms may occur, and some tumors exhibit isolated areas, strikingly reminiscent of a granulosa-theca pattern as well as arrhenoblastoma. These lesions, designated as *gynandroblastoma*, are excessively rare, and indeed their interpretation must be regarded as dubious. Their hormonal action may be androgenic or estrogenic; whether they represent tumors of combined female or male anlagen or whether they should be interpreted as joint varieties of Sertoli and interstitial cell tumors is uncertain.

CLINICAL

On occasion an arrhenoblastoma, especially if well differentiated, produces no apparent endocrine effect. However, the usual tendency for the typical arrhenoblastoma is to produce masculine tendencies. This generally occurs in two definite

phases, defeminization and subsequent masculinization. A typically menstruating woman may first notice oligo-amenorrhea and depletion of fat tissue. Subsequent to this may occur hirsutism, acne, enlargement of the clitoris, increased libido and voice changes. One soprano in the church choir came in only when her voice became a baritone. Similar virilizing changes in the skeletal muscles may ensue; in fact, the first clue to an arrhenoblastoma in one juvenile female was a 420 batting average as a star shortstop in boys Little League Baseball. (Postoperative she was a very mediocre outfielder in her girls' school softball team).

Elevation of the 17 keto-steroids is almost uniform, although rarely to the degree found in certain cases of adrenal tumor. This in rough fashion seems to parallel such virilizing features as hypertrichosis, voice changes and an enlarged clitoris, which are of course accompanied by amenorrhea and loss of breast tissue. The finding of an ovarian tumor leaves little doubt as to the diagnosis; culdoscopy might on occasion be helpful, but was utilized only rarely in our own cases.

TREATMENT AND SALVAGE

The conjunction of increased virilism plus a palpable ovarian tumor is logical grounds for suspecting such a masculinizing tumor as arrhenoblastoma, and exploration is indicated. The finding of a unilateral, often yellowish tumor, is almost pathognomonic, but frozen section may prove of ancillary value, and indicate conservatism in the young patient.

Ideally in the woman who has had her family, complete operation is desirable with total ablation of the uterus and both ovaries. It is well established that with any ovarian malignancy the grossly normal contralateral ovary may be expected to show a high incidence of lymphatic spread tumor, and it is likewise indisputable that arrhenoblastoma is sometimes a malignant lesion. Frequently, however, arrhenoblastoma occurs in the young woman in whom the matter of further pregnancy is of the greatest importance. Conservative operation seems fully justified in such patients, when there is no evidence of extra-ovarian extension.

Johnston et al. have indicated that arrhenoblastoma carries a recurrence rate of slightly more than 20%. Javert notes about the same figure, although he indicates that more than 25% appear histologically malignant. Personally we feel that in many cases it is frankly impossible to correlate the histological appearance with the prognosis, although certainly the well differentiated tumor indicates a better chance of salvage. When recurrence recurs, it is generally intra-abdominal in nature, with frequent return of masculinizing symptoms.

Javert has also noted that following removal of the tumor there is a rather prompt return to normal menses, although hirsutism is slower to regress. Pregnancy frequently occurs within a year post-operative; indeed some cases of arrhenoblastoma have occurred in conjunction with pregnancy. Certainly where further procreation is desired, conservative operation seems fully justified in the absence of ascites, extension, or definite evidence of closed tubes.

ADRENAL TUMORS

Rests of adrenal tissue are rather frequent findings in the normal ovary at routine pathological examination. Where the aberrant tissue is only a chance microscopic finding we prefer to call it a "rest", with the term small tumor being reserved for growth visible to the naked eye.

When there is sufficient functioning adrenal tissue, clinical virilism may ensue, which is exactly similar to that found with arrhenoblastoma. There is the same type of preliminary defeminization followed by subsequent masculinizing symptoms. Certain highly specialized fractionations of the keto-steroids are of some assistance in distinguishing this from other types of clinically similar tumors, but are beyond the scope of this presentation. Return to normalcy follows operation and the prognosis is good. Our own preference is to reject such terms as luteoma, hypernephroma, and masculinovoblastoma. Most lipid or preferably clear cell tumors (for many do not contain fat) fall under a more realistic classification of adrenal, clear cell mesonephroma, luteinized granulosa-theca tumors, or a relative new-

comer to the ranks of functioning tumor, the so-called hilus or Leydig cell tumor of the ovary.

HILUS CELL TUMORS

Berger in 1923 noted certain cells in the ovarian hilum which he felt were intimately related to the autonomic nervous system, and he spoke of these cells as sympathicotrophic. Sternberg and others have indicated that these cells can form a virilizing tumor, and present consensus is that these hilus cells are identical to (if not the same as) Leydig cells. Leydig and hilus cells, if not the same, certainly share a common property in the presence of the so-called crystalloid of Reinke, a doubly refractile bar-shaped structure frequently overlying the cytoplasmic structure. While the finding of these crystals is specific for Leydig or hilus cells, their absence in no way invalidates the diagnosis.

In a recent study by Novak and Mattingly of 18 cases of hilus cell tumors, the sum total available for study at this writing, Reinke crystals were present in less than 50% of the cases. The cell or tumors are usually found in the hilus as clumps of polyhedral eosinophilic cells, with a disproportionately large dark nucleus. In general they are quite distinctive, being smaller and with a much more prominent nucleus than the other lipoid cell tumors. The main source of confusion is regressing lutein cells, or a luteinized granulosa-theca cell tumor. It is amazing how closely the recent paper of Merrill has approximated the findings of our own unpublished study.

Clinically hilus cell tumors are almost uniformly associated with virilism, hirsutism being uniform with amenorrhea the rule in menstruating patients. Enlargement of the clitoris, acne, voice changes and an elevated 17 keto-steroid were less constant. Symptoms are identical with arrhenoblastoma, although older women are afflicted. Although clinical virilism was almost uniform, it was rather paradoxical to find that where endometrium was available for study, the pattern was generally hyperplastic in nature.

Clinically these hilus cell tumors are found predominantly in the older patient, only 4 of 18 patients occurring before the 45th year. They are rarely large (more

than 5 cms.) always unilateral, and in no case was there any evidence of malignancy or recurrence, despite frequent conservative surgery. Prompt regression of hirsutism and other masculinizing stigmata was routine, with one of the four women in the menstrual era promptly becoming pregnant.

While virilism was almost uniformly noted, there is one widely quoted case (Plate, W.) which reports an estrogenic effect, primarily because of associated endometrial hyperplasia. It is our own impression, and this has been re-enforced by preliminary study by The Ovarian Tumor Registry, that Plate's case should be interpreted as luteinized granulosa-theca tumor. This comment is in no way indicated to appear critical, but rather to illustrate the difference of opinion that may exist between recognized pathologists when these equivocal lesions appear.

In any case it seems probable that endometrial hyperplasia can occur in conjunction with clinical virilism, and must not necessarily imply unopposed estrogen effect. The breakdown of these closely related steroids with a bi-sexual endocrine effect on different end organs seems a very real possibility.

Sherman and Wolfe have proposed a very enticing postulate in ascribing to hilus cells in the production of a certain bisexual steroid, which they call sexagen and which may on occasion produce an estrogen or androgen. It is their feeling that hilus cells are usually suppressed during the menstrual era, because of the functioning ovarian hormones. With the advent of the menopause there is a drop in the ovarian secretion and a consequently elevated follicle stimulating hormone of the pituitary. This elevated F S H causes stimulation of the hilus cells with excessive sexagen (in an estrogenic role) leading to endometrial cancer. Hilus cells are found in a large proportion of such women if proper blocks through the ovarian hilus are carried out.

The same workers attempt to explain the virilism found in the Stein-Leventhal syndrome as being due to an incomplete suppression of the hilus cells during the

menstrual era, with a resultant increased secretion of sexagen (in an androgenic role). Obviously the role of "sexagen" is only hypothetical, but the capability of bisexual steroidal function or response is becoming increasingly apparent and accepted by many gynecologists.

CONCLUSION

Thus it would seem that we have a group of ovarian tumors which are capable of producing a virilizing effect. None of these tumors is common, and it should be borne in mind that the mere presence of hirsutism in no way indicates a diagnosis of masculinizing ovarian tumor or mandates exploratory laparotomy. Increased hair growth is frequent in women, and frequently no causative tumor can be found. Let us simply call it idiopathic hirsutism.

If, however, a palpable ovarian tumor is noted along with a story of primary defeminization followed by masculinizing trends, the possibility of one of the functionally active tumors must be borne in mind. Laparotomy is indicated with complete operation in the woman who has completed her family. There is no justification for the old saying "she is much too young for a hysterectomy"—if a woman has had all the desired children she is rarely too young. While it is true that bilateral adnexectomy may produce menopausal symptoms, this seems preferable to the risk of leaving residual tumor in a conserved ovary, especially in an era where oral hormone therapy is so satisfactory.

In the patient desiring further pregnancy, there is a certain risk in conservative surgery, but the low recurrence rate suggests the justification of this approach. The likelihood of further pregnancy as indicated by Javert indicates the frequent success of preservation of the uterus and one adnexa. In any case, removal of the tumor assures the woman of a fairly prompt response to the normal sexual pattern which has been so spectacularly changed by these uncommon bizarre tumors.

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Comprehensive Rehabilitation

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Comprehensive rehabilitation as we know it today, depends on the services of a number of professions. Total evaluation of the individual concerned in relation to his environment is essential. Therefore, in order to approach the problems of a "disabled" individual as a whole, the many aspects involved in such total rehabilitation have brought about the organization of the so-called rehabilitation team. Such a rehabilitation team must be the functional unit to provide in a coordinated manner the services which the handicapped individual needs. To bring about successful rehabilitation there must be communication and cooperation between all members of the team, the patient, and the community.

A rehabilitation program, to be comprehensive, must include medical, psychological, social and vocational services. Many Centers over the Nation have two or three such services, but few have all four. The Hot Springs Rehabilitation Center, as operated by the Arkansas Rehabilitation Service, will be such a comprehensive center, offering all four services on a coordinated team approach to an individual's total problem.

In strict rehabilitation of the serious physical disabilities, it is the aim to "make the most of what is left" in the majority of individuals. Few can return to complete physical normalcy as before injury. It is the hope, as has been phrased by Dr. Howard Rusk, and repeated by many, "to enable the individual to live to the limit of his limitations". It is accepted by all that it is important to save and prolong life. However, it is just as important, if not more so in our world today, to save years of dependency and give some "life to years, rather than just years to life". One must never lose sight of the fact that it is the individual concerned that it is important and must be treated as a whole; not something that can be dissected, solved piecemeal, pigeonholed, and forgotten.

Many factors change the overall problem from day to day. As in a football game, the patient must carry the ball. Those concerned with his total rehabilitation are just the team that assists him in the many necessary aspects.

To achieve the above, there are three simultaneous goals: (1) Medical—to restore the individual to the highest possible degree of physical function and personal independence; (2) Psycho-Social—to improve the patient's attitudes and feelings about himself, his family, his job, his fellow man, etc., and as we realize more and more, the reverse is also true especially as it relates to the family and the community; and, (3) Vocational—to restore the individual as an economically independent person, at the highest level of his employability.

It should be emphasized that in a seriously disabled individual, the primary need not only of the individual but also of those who take care of him, is one of communication. This is often overlooked. Speech therapy in its many aspects, when indicated, should be begun very early as there is no one so frustrated as an aphasic patient. Usually little can be accomplished of any degree until some improvement has been noted in this respect.

The next objective is to assist the individual to become as independent as possible in what is termed "A. D. L." or Activities of Daily Living. This involves transfer activities from bed to wheel chair to toilet stool, etc., and back; dressing, feeding, grooming, and personal care, including bladder and bowel training when needed. Not all individuals can become completely physically independent, but any degree of improvement in this respect as to a patient helping himself, not only is of great psychological value to the individual but makes it much easier for those who attend the individual. Often such independency, if nothing more, frees someone else in the family to go out and become the supporting member with its far reaching implica-

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tions. Subsequent to wheelchair independency, ambulation is desired initially for exercise purposes for physiological reasons, and eventually, if possible, for functional use in limited areas. This may require various types and combinations of corsets, braces, crutches, and canes. Usually though, one continues to depend on the wheelchair for distance and sustained periods of activity. It usually does not take long for an individual, if disabled to any degree, to realize that the upper extremities are most important for independency and that one's lower extremities are quite expendable and easily substituted for if need be in this day and age.

Another objective is one of vocational training in relation to the individual's interests and abilities. In this area of the United States, without widespread industry, often a compromise must be made in training to take advantage of the individual's desires as to where he will live and what job opportunities are available. Often some avocational pursuit is all that

can be obtained because of many factors. If so, this should be worked for just as earnestly as a true vocational objective for one must have an interest, an activity, to keep from vegetating. The hope for reward, not necessarily financial, but in one form or another, is usually the motivating and continual supporting force in most of us; and of much greater importance in the handicapped. Last, but not least, is placement in suitable employment, based on the individual's ability, not his disability, sympathy, or pity.

Therefore, the problem in total rehabilitation is basically one of education and communication between all persons, agencies, and organizations — both public and private—that may be concerned. In the final analysis, rehabilitation depends on community resources and opportunities, plus community services of a cooperative nature at the highest possible level of efficiency, not only for the betterment of the individual and his family, but also for the community and the Nation as a whole.

◆ *What's* NEW ◆

Neurosurgery

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It may be commendable that strictly from year to year very little is really new in neurosurgery. Fortunately, the profession does not hastily lend itself to every innovation presented. Usually, when some development has matured sufficiently for general acceptance, time and cautious evaluation have changed its newly acquired brilliance to a more acceptable shade, implying proven usage and confident application. The transformations are insidious, and the demarkation between innovation and established usage is sometimes difficult. Even well established procedures for one neurosurgeon may represent some new development to another.

The advances in neurosurgery during the past year are primarily in the development and firm establishment of procedures that were questionable innovations only a year or so before. Although the injection of radiopaque dye into the carotid artery to study the cerebral circulation has been done for 30 years, it is only recently that more suitable dyes and x-ray techniques have been developed to safely justify and benefit from such procedures.

Cerebral arteriography has gone far toward almost totally displacing the use of air injection as a diagnostic technique. Air studies show only space occupying or displacing masses; arteriographic studies can show primary disease of blood vessels, atheromatous plaques, partial vascular occlusions, aneurysmal defects, thrombosis, tumor stains, minor vessel displacements, indeed much more than air studies alone can do.

Certain innovations of a few years ago are now looked upon as common-place and necessary. Hypothermia, provided through the use of a refrigerating blanket, permits

body temperature to be reduced to as low as 84 to 80 degrees Fahrenheit, thus permitting temporary, but extensive, arterial occlusions so necessary to many cerebral arterial operative procedures. The use of prepared solutions of urea, when given intravenously, result in such shrinking of brain volume as to now permit much more ready and safer access to otherwise near unapproachable areas. Newly introduced drugs now effect a greater degree of dehydration, thus combatting the brain edema of cranial trauma.

Probably, one of the most valuable of our recent developments in neurosurgery is a better understanding of electrolyte balance and control. It is now readily recognized that the progressive stupor in a postoperative patient of several days, or the progressive downhill clinical course of a recent head injury, may be due simply to a disturbance in electrolyte balance. This may well be one of our greatest advancements in the past few years.

Acceptance of certain surgical procedures has been approached with caution but, now, occluding plaques causing obstruction in major vessels can be removed. Direct intracranial attack can be carried out, either through clipping off or actual removal of aneurysmal defects, and certain tumors previously considered near inaccessible in their location can now be approached.

Since the beginning of modern surgery, recorded attempts to remedy the problem of hydrocephalus have met with frustration and disappointment. Draining off or shunting of cerebral spinal fluid into every conceivable organ or cavity of the body has been tried, with varying degrees of disappointment. By far, our most gratify-

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ing results to date have resulted from the development of a minute and seemingly permanent valve that controls spinal fluid drainage from the ventricular system directly into the major vessels of the heart.

Not yet so time proven, nor yet so generally accepted, are other procedures, such as the making of destructive lesions deep in the thalamus to lessen the tremor of Parkinson's disease, removal of the pituitary gland to delay the progression of certain carcinomas, and the anterior approach through the cervical spine for re-

moval of cervical intervertebral disc lesions.

Even industry is doing what it can to benefit the neurosurgical patient through the manufacture of pre-formed plastic arterial substitutes, the cerebrospinal fluid valves mentioned previously, and now a quick drying plastic prepared and ready to spray upon and protect the aneurysmal defect that threatens to rupture.

The innovations of today may have commonplace acceptance tomorrow.

A TEACHING SEMINAR
FROM THE
UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE

Congenital Aortic Stenosis

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Recent advances in the diagnosis and treatment of congenital heart defects prompted this seminar which will deal with the specific entity of congenital aortic stenosis. It should be emphasized that the outstanding feature of this disease is the definite incidence of *unexpected sudden death*. Reynolds and his associates (1) reported on a collected series of 306 cases with an incidence of 7.5 per cent of sudden deaths. There is also evidence that with increasing years the fibrous stenotic aortic valves invariably become calcified and accordingly much less amenable to surgical correction. (2) Therefore, when a clinical diagnosis of aortic stenosis is considered, the physician should make every effort to substantiate this diagnosis and to assess the severity of the obstructive lesion. We have had the opportunity of studying 11 patients with this condition in the past two years, 7 of whom have now undergone definitive surgery.

This anomaly is not uncommon; approximately 3 to 6 per cent of all children with congenital heart disease have aortic stenosis. (3, 4, 5, 6) In our small group as in most larger series, males are affected more frequently than females. (Fig. 1)

Most of these children are in apparent

good health and the murmur is usually noted on a routine examination. The minority will complain of easy fatigability and exertional dyspnea. Syncope and chest pain are uncommon but ominous symptoms in childhood. Occasionally a severely affected infant will develop congestive heart failure in the first year of life. The diagnosis in this group is often difficult and the prognosis quite poor.

The cardiac murmur is characteristically a harsh ejection type systolic murmur maximal in the second right interspace radiating to the neck. (6) A thrill is usually palpable. In infants and young children the murmur may be maximal along the left sternal border or at the apex. (3) When recorded phonocardiographically, the systolic murmur has a characteristic "diamond shape" (7) in contrast to the level, pan-systolic murmur of a ventricular septal defect with which aortic stenosis may be confused. Ten to 20 per cent of patients in larger series also have aortic diastolic murmurs. (1, 3, 6) The heart sounds are frequently normal although the aortic second sound may be decreased in intensity. The blood pressure is usually normal and a small pulse pressure is apparently not a reliable prognostic sign.

Roentgenologic examination may show a heart of normal size or varying degrees of left ventricular enlargement. The size

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Fig. 1

SEVEN OPERATIVE CASES OF CONGENITAL AORTIC STENOSIS

Case No.	Name	Age	Sex	EKG	Murmur	X-ray	Operation	Stenosis	Follow-up
1	T.F.	6 yr.	M	LVH	Gr. V, Aortic	LVH	Bypass	Valvular	Living and well
2	R.W.	11 yr.	M	LVH and Strain	Gr. V, Aortic	Normal	Bypass	Valvular	Living and well
3	M.W.	7 yr.	M	LVH and Strain	Gr. IV, Aortic	LVH	Bypass	Valvular	Living and well
4	T.C.	5 yr.	M	LVH	Gr. V, Aortic	LVH	Bypass	Valvular	Living and well
5	D.D.	8 yr.	M	LVH and Strain	Gr. IV, Aortic	Normal	Bypass	Supravalvular	Living and well
6	C.M.	17 yr.	F	LVH	Gr. V, Aortic	LVH	Hypothermia	Valvular	Living and well
7	R.R.	6 mo.	M	RVH and LVH	Gr. III, 3 and 4 Lt. ICS	Diffuse cardiomegaly	Hypothermia	Valvular	Expired at surgery

is frequently normal as significant left ventricular hypertrophy may not be manifest in the radiograph. Post-stenotic dilatation of the ascending aorta is commonly present. (Fig. 2)

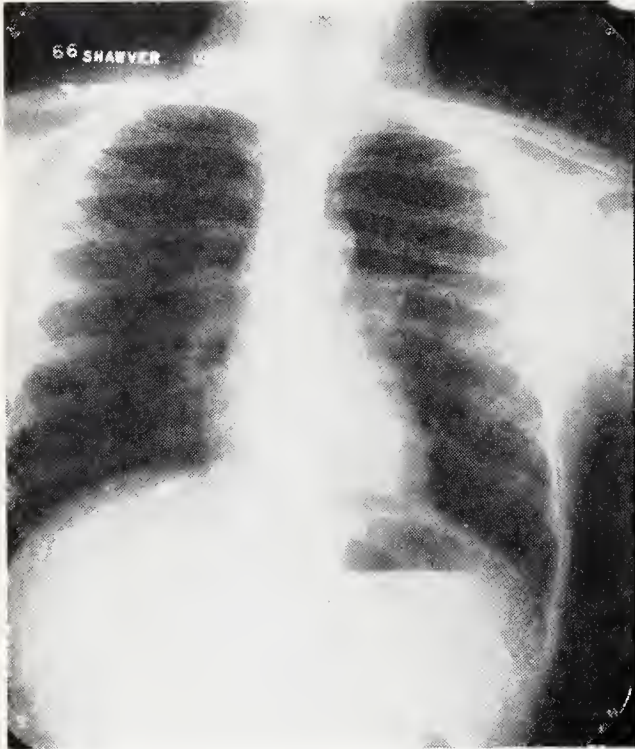


Fig. 2

PA chest x-ray demonstrating post-stenotic dilatation of ascending aorta with normal heart size. (Case 5)

In aortic stenosis the electrocardiogram is probably a more reliable index of left ventricular work than the chest x-ray. Left ventricular hypertrophy characterized by tall R-waves over the left precordium and deep S-waves over the right precordium is frequently present. The strain pattern with ST depression and T-wave inversion in V_5 and V_6 is usually but not invariably present in the more severe degrees of stenosis. (Fig. 3)

Right heart catheterization will show no significant abnormalities except perhaps an elevated pulmonary capillary pressure in severe cases, but it is frequently indicated to rule out any associated defect and to determine the cardiac output. The only completely reliable method for detecting the more severe degrees of aortic stenosis is catheterization of the left ventricle in order to determine the mean systolic pressure gradient across the valve and the approximate valve area using the modified formula of Gorlin and Gorlin. (8)

Pressures in the left ventricle may be determined by several methods. Probably in children the simplest and safest method is retrograde passage of the catheter from a peripheral artery. However, in patients with aortic stenosis it is often difficult in our limited experience to maneuver the catheter through the stenotic valve. Other investigators report better success. Figure 4 shows a typical pull-back pressure tracing from the left ventricle to the aorta. In questionable surgical candidates we have resorted to direct percutaneous left ventricular puncture. This technique has been used frequently at other centers with a very low morbidity and no mortality. (9)

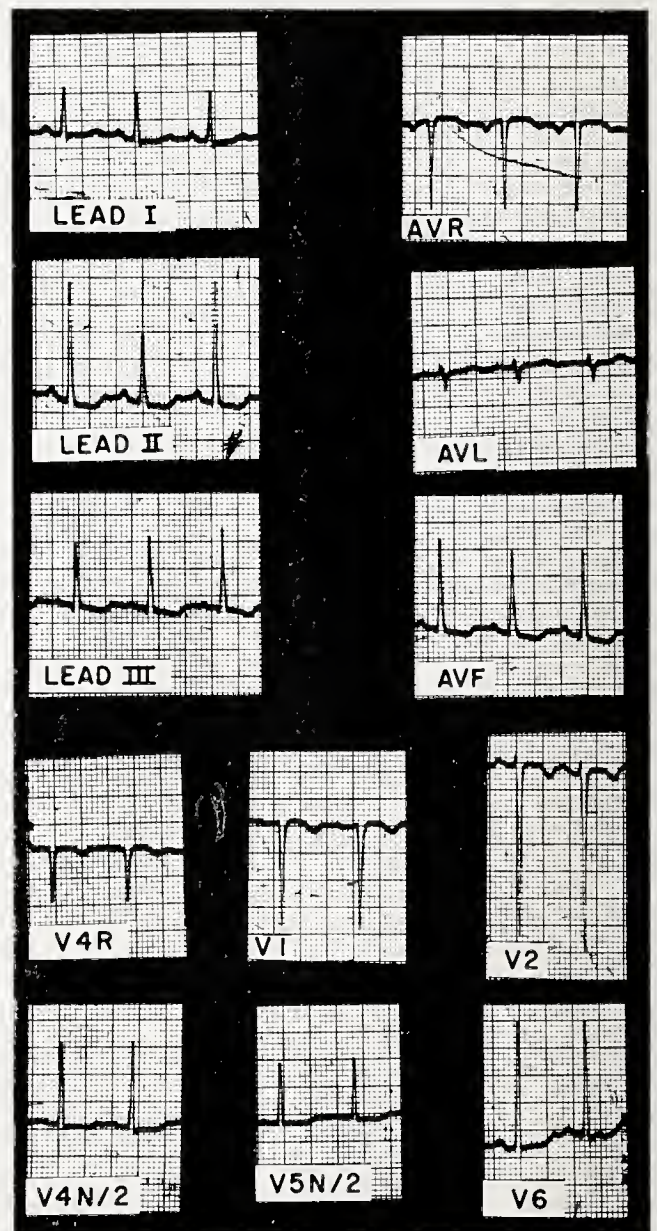


Fig. 3

Electrocardiogram showing left ventricular hypertrophy and the strain pattern. (Case 5)

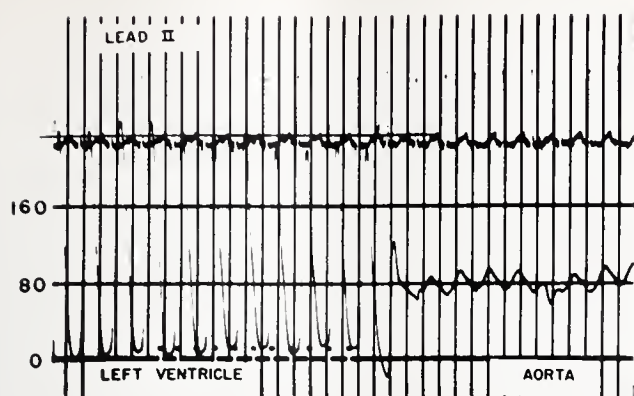


Fig. 4

Pull-back pressure tracing from left ventricle across the stenotic aortic valve to aorta. Note left ventricular pressure curve which is impinging on ECG trace which has a systolic pressure of 240 mm. Hg. compared to systolic pressure of 90 in aorta. (Case 1)

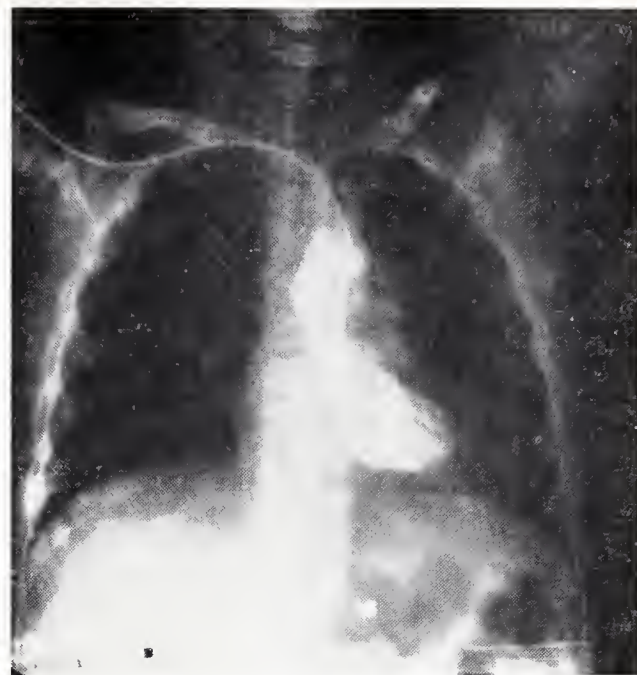


Fig. 6

Angiocardiogram obtained with a retrograde catheter passed through right brachial artery into heart, showing supra-ventricular stenosis just above the origin of the coronaries. (Case 5)

We have encountered no difficulty in our experience with 6 cases. At the time of catheterization contrast media may be injected into the left ventricle and angiocardiology carried out. (Fig. 5) This may be particularly valuable in cases where the level of left ventricular outflow obstruction is in doubt. (Fig. 6)

The indications for corrective surgery in patients with congenital aortic stenosis are now fairly well defined. (1) Children with symptoms which may be directly related to the clinical diagnosis of aortic stenosis such as syncope, chest pain or increasing fatigue or dyspnea; and those children who show definite electrocardio-

graphic signs of left ventricular strain even without symptoms should be considered for surgery. A mean systolic ejection gradient across the aortic valve of greater than 40 mm. Hg. or a calculated valve size of less than 0.75 cm. (2) indicates critical stenosis which should be surgically relieved.

All of our 7 patients undergoing surgery met the above indication. Four other patients with minimal symptoms and no significant electrocardiographic or x-ray changes are being followed.

The pathological anatomy of the congenital aortic valvular stenosis in our patients is similar to that described in the larger reported series. (10) The commissure between the left and right coronary leaflets was usually completely fused. There was partial fusion between the right coronary cusp and the non-coronary cusp and only slight or no fusion between the left coronary cusp and non-coronary cusp. This arrangement permitted the valve to function physiologically as a bicuspid valve. There were varying degrees of thickening of the cusp. In none of the cases was there any evidence of any inflammatory reaction. The cross-sectional diameter of the orifice varied from 3 to 12 mm. We have not encountered any calcification of valves in these children, a condition which is found

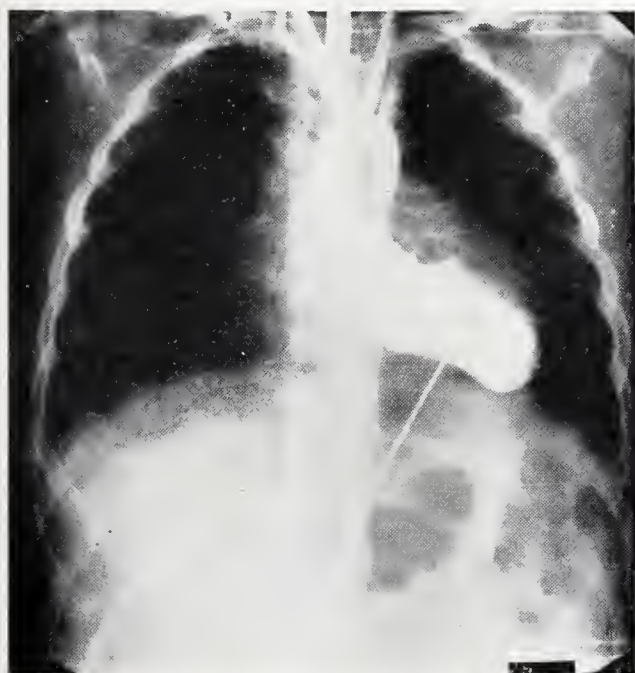


Fig. 5

Angiocardiogram obtained through percutaneous left ventricular puncture demonstrating narrow jet of dye at the stenotic aortic valve and thickening of the valvular cusps. (Case 3)



*attains
sustains
retains*

*extra
antibiotic
activity*

DECLO

attains activity
levels promptly

DECLOMYCIN Demethylchlortetracycline attains — usually within two hours—blood levels more than adequate to suppress susceptible pathogens—on daily dosages substantially lower than those required to elicit antibiotic activity of comparable intensity with other tetracyclines. The average, effective, adult daily dose of other tetracyclines is 1 Gm. With DECLOMYCIN, it is only 600 mg.

sustains activity
levels evenly

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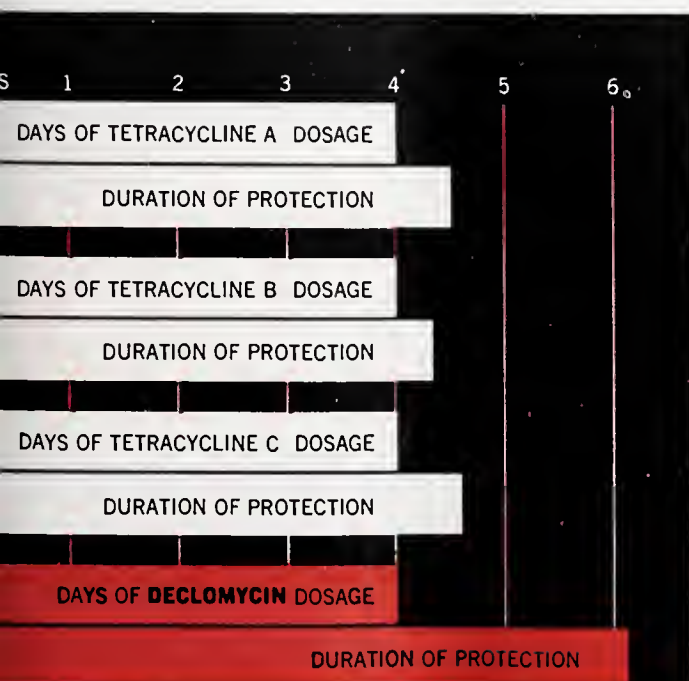
PROTECTION AGAINST PROBLEM PATHOGENS

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CAPSULES, 150 mg., bottles of 16 and 100. **Dosage:** Average infections—1 capsule four times daily. Severe infections—Initial dose of 2 capsules, then 1 capsule every six hours.

PEDIATRIC DROPS, 60 mg./cc. in 10 cc. bottle with calibrated, plastic dropper. **Dosage:** 1 to 2 drops (3 to 6 mg.) per pound body weight per day—divided into 4 doses.

SYRUP, 75 mg./5 cc. teaspoonful (cherry-flavored), bottles of 2 and 16 fl. oz. **Dosage:** 3 to 6 mg. per pound body weight per day—divided into 4 doses.

PRECAUTIONS—As with other antibiotics, DECLOMYCIN may occasionally give rise to glossitis, stomatitis, proctitis, nausea, diarrhea, vaginitis or dermatitis. A photodynamic reaction to sunlight has been observed in a few patients on DECLOMYCIN. Although reversible by discontinuing therapy, patients should avoid exposure to intense sunlight. If adverse reaction or idiosyncrasy occurs, discontinue medication.

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in older patients in their teens or early adulthood. (5)

One of our patients (Case No. 5) had a supravalvular stenosis 2 to 3 mm. above the aortic valve. This is a rare anomaly; only 16 cases have been previously reported, all at post-mortem examination. (10, 11) Our patient is the first reported who has had a successful surgical correction. (13) The occurrence of subvalvular stenosis is somewhat more common, although less frequently than formerly thought. (4, 5) We have not encountered this anomaly in our small series. There were 10 such patients in the 46 patients with aortic stenosis in the series reported by Spencer. (10)

The two popular surgical methods permitting direct attack on the aortic valve are hypothermia with caval inflow occlusion and total cardiopulmonary by-pass with the heart-lung machine. Since the use of hypothermia safely permits periods of complete circulatory arrest approaching 5 minutes, the surgeon always has a race against time. We believe, as others, that the pump oxygenator with total body perfusion is safer than the hypothermic technique although the aortic commissurotomy usually does not consume more than 3 to 5 minutes of aortic occlusion. Extracorporeal perfusion gives the surgeon more time if needed to assess the lesion and make accurate unhurried incisions in the center of the commissural fusion. Also if subvalvular stenosis is present more time is needed than would be safe with hypothermia.

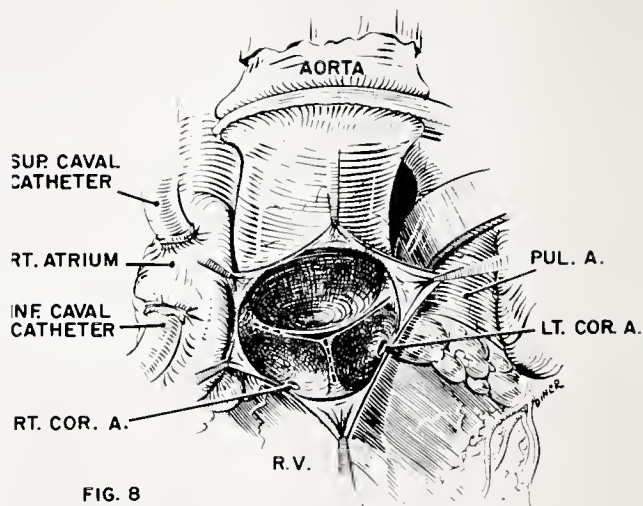


FIG. 8

Fig. 8

Artist sketch of the usual pathologic findings in congenital aortic stenosis with the inserted dotted lines indicating the incisions for the valvulotomy.

The best surgical approach to the aortic valve is probably through a median sternotomy incision; however, a bilateral transverse thoracotomy incision through the 3rd or 4th intercostal space is satisfactory. The aortic valve is exposed through a "J" shaped incision at the base of the ascending aorta (Fig. 7) after the aorta has been cross-clamped distally producing ischemic cardiac arrest within a few seconds. The valve is exposed (Fig. 8) and the fused cusps are incised with a knife or small straight scissors along the center of the commissural ridge trying to leave a slight thickening on each edge to provide as broad an area for closure of the leaflets. The fusion between the right coronary and non-coronary cusps is in-

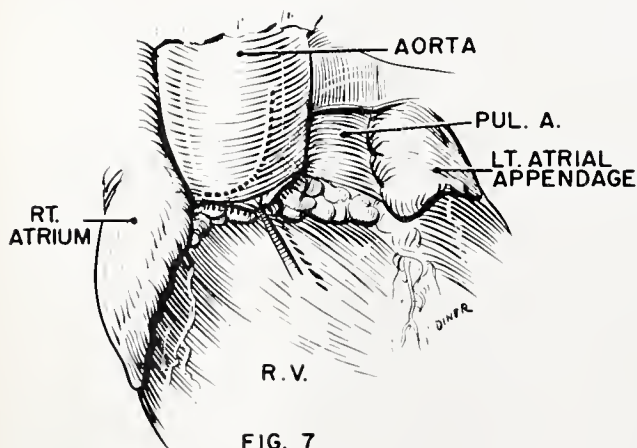


FIG. 7

Fig. 7

Dotted line at base of aorta inserted as line of incision to expose the aortic valve.

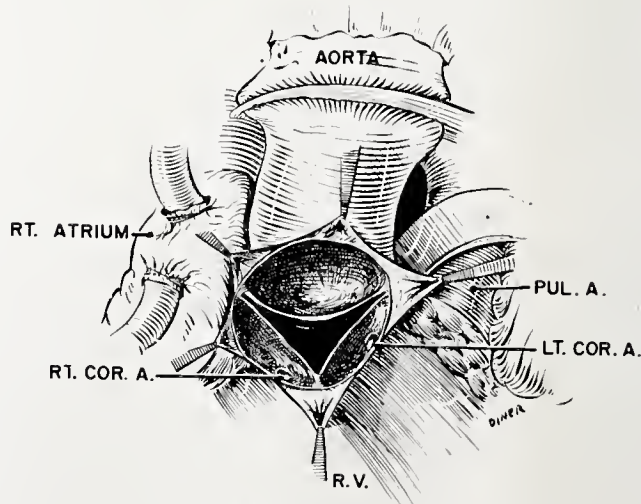


FIG. 9

Fig. 9

After valvulotomy is completed.

cised completely to the aortic wall and that between the left coronary and the non-coronary cusps is incised almost to the wall of the aorta. The commissure between the two coronary cusps, which is usually incompletely formed, is only partially opened to lessen the hazard of aortic insufficiency from too radical a valvulotomy. This usually opens the aortic valvular orifice to a minimum diameter of 2 cm. (Fig. 9), an opening which will abolish the pre-existing pressure gradient. This increase in diameter is magnified by the principle that flow is proportional to radius to the third power. An index finger is always introduced through the valve into the left ventricle to rule out a co-existing subvalvular stenosis. The aortotomy incision is then closed with a running suture of 4-0 arterial silk and the aortic clamp is removed and cardiac action resumes spontaneously.

We have operated upon two patients with hypothermia alone, one patient (Case No. 6) before the pump was clinically available survived and has done well. One patient (Case No. 7) who was 6 months old and weighed 11 pounds was in severe congestive heart failure and also had a large balanced patent ductus. He was operated upon using hypothermia and expired during surgery just as the aortic valve was exposed after the ductus had been closed. The other five patients whose ages ranged from 5 through 11 years were operated upon using total cardiopulmonary by-pass with the Kay-Cross oxygenator and the DeBakey type of pump and perfused from 5 to 15 minutes. All survived and are at present leading normal lives without restrictions. None appeared to have any clinically significant residual aortic stenosis or aortic insufficiency.

SUMMARY AND CONCLUSIONS

The clinical and pathological picture of congenital aortic stenosis is presently much better understood. The majority of patients with this anomaly can be surgically corrected with a low operative mortality. The complications of untreated aortic stenosis are severe incapacitating symptoms, a significant incidence of sud-

den death and with the passage of years calcific aortic valves. The results of our experience are in accord with those of larger published reports. Of our 7 operative cases, 5 with uncomplicated valvular stenosis survived and are doing well. One patient had supravalvular stenosis which is a rare variety of aortic stenosis and will be the first patient who had a successful surgical repair. The only mortality was an infant who fell into the high risk group. The surgical pathologic anatomy, indications for operation and the surgical approach are reviewed.

The authors gratefully acknowledge the contributions of Mr. Jack Diner, Department of Medical Illustrations and Dr. Marvin Daves, Department of Radiology.

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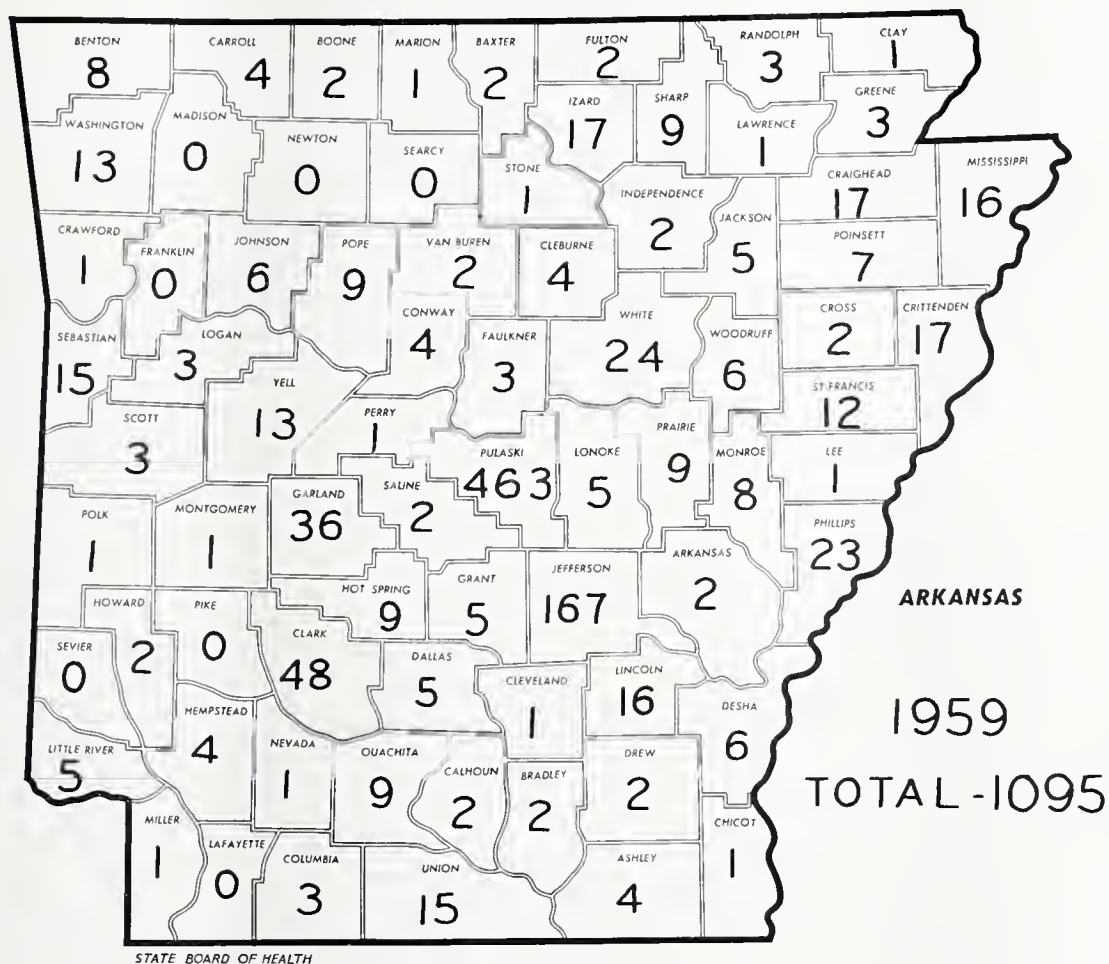
What Is Your Diagnosis?



FOR ANSWER SEE PAGE 335

Arkansas Public Health at a Glance

ANIMAL BITES IN MAN



Rabies is, and will continue to be, a major public health problem in the State of Arkansas. Much work is being done to control this disease; but with the reservoir in the wildlife population, eradication is not in the foreseeable future. The accompanying map shows the number of animal bites in man during the past year. These were, of course, not all rabid animals; but it does indicate the potential danger to our citizens.

An encouraging advance in the control of rabies among those who are frequently exposed to animal bites is the development of pre-exposure human rabies vaccine. Many veterinarians are now making use of this service. The program is purely voluntary, and must be requested from the State Health Department by the individual. In 1959 some fourteen veterinarians were exposed to positive rabid animals. Many of these had received the pre-exposure vac-

cine and had only to take two booster injections intracutaneously of .2 ml. of vaccine in order to build a high antibody protection level against rabies. Those who were not so fortunate had to take the tissue vaccine of 14 doses.

The primary course of the vaccine now consists of four intracutaneous injections of .2 ml. at intervals of approximately 5 to 7 days. The injections must be given intracutaneously and not subcutaneously. If the individual has ever had the Pasteur treatment for rabies, only one injection is required, usually of .2 ml. of the vaccine, to build up protective antibodies against rabies. The vaccine is reported to confer a high degree of active immunity against rabies for a period of two years and probably for a longer period. There have been no systemic postvaccinal reactions. In some instances a moderate local reaction at the vaccination site had been reported

following the second injection, but has not been severe enough to prevent completion of the series.

In order to properly determine the level of antibody protection an individual has achieved, blood samples are necessary. One specimen is collected before vaccination and one approximately one month after the last injection. These are submitted to the State Board of Health hygienic laboratory where they are paired and sent to another laboratory specializing in this type of determination. In a few cases individuals have received six or eight injections before acquiring a satisfactory antibody level against rabies.

RESOLUTION

BE IT RESOLVED that the members of the Garland County-Hot Springs Medical Society express themselves on the recent loss of Dr. Homer K. Wright.

Dr. Wright was an esteemed member of our Society for many years. He was both able and kind and will long be remembered by all of us.

As a mark of respect and in appreciation of his accomplishments as a Physician this Society has made a contribution to the Cancer Fund in his name.

BE IT FURTHER RESOLVED that a copy of this resolution be sent to his wife, a copy be furnished to the press, and also to the Secretary of the State Medical Society.

BE IT FURTHER RESOLVED that a copy of this resolution be inserted into the Hot Springs-Garland County Medical Society Records.

D. B. Stough, M.D.
H. King Wade, Sr., M.D.
E. K. Clardy, M.D.

RESOLUTION

BE IT RESOLVED that the membership of the Hot Springs-Garland County Medical Society pause with respect and extend appropriate sympathies over the loss of our beloved member, Dr. George B. Fletcher.

Dr. Fletcher's reputation as an outstanding neurologist is well known. Among his many honors is that he served as President of the Arkansas State Medical Society. Many will well remember that he gave freely and willingly of his talents, and of his kind consideration of all with whom he came into contact. His attachment and interest in children was further evidence of his lovable character.

BE IT FURTHER RESOLVED that a copy of this resolution be furnished his wife and family and the press, and that the resolution be spread on the minutes.

Dr. Gaston A. Hebert
Dr. Chas. E. Garratt
Dr. H. King Wade, Sr.

RESOLUTION

BE IT RESOLVED that the members of the Hot Springs-Garland County Medical Society go on record in expression of their sympathies in the loss of their Senior member, Dr. John F. Rowland.

Dr. Rowland had a distinguished medical career and was highly regarded in the practice of his specialty. It will be well remembered that despite his illness of recent years, that necessitated retirement, he continued his active interest in the affairs of the medical profession and offered valued advise and counsel.

BE IT FURTHER RESOLVED that a copy of this Resolution be sent to his wife and family, that a copy be furnished the press, and the Resolution be spread on the minutes.

Gaston A. Hebert, M.D.
D. B. Stough, M.D.

RESOLUTION

BE IT RESOLVED that the members of the Hot Springs-Garland County Medical Society express themselves on the recent loss of Doctor James W. Leatherman.

Doctor Leatherman's knowledge of, and his keen interest in the field of Internal Medicine was recognized by all of his colleagues. This, combined with his personal-

FEATURES

ity and his genuine concern for his fellow-man, will keep his memory in the hearts of all of us.

As a mark of respect and in appreciation of his accomplishments, as a physician, this Society has made a contribution to the Memorial Fund of St. Luke's Church.

BE IT FURTHER RESOLVED that a

copy of this resolution be sent to his wife, a copy to be furnished to the press, a copy to be forwarded to the Secretary of the Arkansas Medical Society, and that the resolution be spread on the minutes.

Robert H. Atkinson, M.D.

Driver Rowland, M.D.

W. R. Lee, M.D.

The Council Works Hard

ALFRED KAHN, JR., M.D.

The Council of the Arkansas Medical Society is a hard working group. The Society as a whole probably does not appreciate the vast amount of time and patience it takes to perform a Councillor's duties. Council meetings are most important, as they represent the Society's governing body between meetings of the House of Delegates. The meetings are in no sense secret and are almost invariably attended by non-council members, who have come to discuss some problem. The minutes are published in condensed form in the Journal of the Arkansas Medical Society, and are available for reference to the members.

The Council is an orderly, well organized group, and opinions are freely expressed and often argued. There are no rubber-stamp tactics. Most problems have required extensive preparation prior to presentation. This often means subcommittee work or meetings with other interested groups. For example, the relationship with Blue Cross and Medicare is a very time consuming, continuing chore. The Council meetings usually begin at noon and often consume a whole afternoon, despite a complete mimeographed report on all problems to be presented. The meetings are most ably organized by the Executive Secretary, Mr. Paul Schaefer. Since some Councillors come from as far as 175 miles, this means at least one day given up by these busy practitioners; this is usually the day that would normally be set aside for rest; on these occasions this amounts to about a seven day work-week. Measured dollar-wise, if it is a work day, the sacrifice of this meeting and the preparatory meetings

however, other professions and business people have this same problem—the latter do have the advantage of their work continuing through the efforts of their business organization.

A criticism of the Council that is heard once in a while is that it represents an oligarchy. This is untrue. The organiza-

tional set-up is analogous to that of the Federal or State government with a Senate and a House of Representatives. The Council represents the smaller, Senate. The duties are not entirely similar, in that the council represents an interim governing body between meetings of the House of Delegates. It should be pointed out that the Councillors are elected by their district; they are not appointed. Actions taken by the Council represent indirectly the voice of their district. Manifestly the Council has to assume responsibility for many important decisions because a body as big as the House of Delegates simply could not convene often enough with a quorum to transact all the business of the Society.

The problems facing the Council are always numerous. High amongst them, in order of frequency are medico-economics and medical public relations. Currently, the biggest of the medico-economic problems is that of medical insurance, including Blue Cross schedules and Medicare schedules and contracts. These affairs touch every member of this Society. The Forand Bill has been an important topic in past months. The proper image of the physician and the Medical Society in the public mind requires careful, tactful and honest judgments in our public relations. The way of living in America has changed drastically in the past 100 years; and it is necessary to continuously explain the physician's role in a society of increasing economic pressure, increasing world tensions and increasing urbanization. The Council faced with this public relation job not only has to judge right from wrong, but often has to judge right from right and what will be more right in the public and professional mind. If you do not agree with their decisions, the council is a willing forum for listening to your dissents.

The Council is doing a good job and merits your support.

MEDICINE IN THE NEWS

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Medical students pay more than twice as much as Ph.D. students for their education and receive only one fourth the financial assistance from scholarships, fellowships, and assistantships, according to a report presented before the annual meeting of the Association of American Medical Colleges, at Hollywood Beach, Florida.

"Thus," according to Dr. J. Frank Whiting, Assistant Director of the Division of Operational Studies of the AAMC and author of the report, "there exists an 8-1 fiscal ratio of income and expenses working to persuade the college student to enter graduate instead of medical school."

Based on a comparative analysis of the results of an AAMC study of medical students' financial status and a study by the National Opinion Research Center of arts and sciences graduate students, the report reveals striking differences between medical and graduate students in both the cost of education and the means of financing it.

In greater detail, these were the findings:

The average direct cost of medical school (living costs excluded) to the medical student is about \$1,000 a year for four years compared to \$450 a year for four years for the Ph.D. student.

About 50% of medical students receive some form of stipend income (scholarships, fellowships, and teaching and research assistantships) compared to 61% of Ph.D. students, medical students receiving an average of \$500 a year and graduate students, \$2,000.

With the majority of the parents in both groups coming from the upper middle and high income groups, 84% of medical students received parental help in contrast to 22% of the Ph.D. students.

Forty seven per cent of the medical students used loans as a source of income compared with 9% of graduate students, the average value of the loans being \$3,900 for the medical student and \$2,500 for the graduate student.

"The medical students," the report states, "pay their bills by using their own

families' resources, by outside employment, and by mortgaging their future earnings as physicians. The arts and sciences graduate students by and large do not draw upon these resources because they don't need them. Instead, as the National Opinion Research Center Report comments 'The American graduate student characteristically makes his living by going to school'."

"In view of these facts it is not surprising that there has been a decline in applicants to the 1957-58, 1958-59 and 1959-60 classes of medical school."

SUMMARY OF SUPPLEMENTARY REPORT A OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The following statement summarizes briefly the supplementary report of the Council on Medical Education and Hospitals on the report of the Special Study Committee on scholarships and loans: the complete report was considered by the House of Delegates at its meeting in Washington, D. C., November 28-30, 1960:

- I. The findings of the Special Study Committee justify the following conclusions:
 - A. There is a decline in the number and quality of eligible college students manifesting a serious interest in medicine as a career.
 - B. This apparent shift away from medicine is due in part to the high cost in time and money of securing a medical education.
 - C. The trend has been heightened by a dramatic emphasis on careers in science and engineering which are stressed by the urgency of certain domestic and international issues.
 - D. The cost of post-baccalaureate education in other sciences is usually much less than the cost of a medical education.
 - E. An affluence of scholarships, fellowships and other financial aids for graduate students in many fields is in striking contrast to a relative paucity of similar financial assistance available to students in medicine.
 - F. These circumstances weaken the appeal of medical education at a time when it is predicted that the

national population will be increased by as much as 55 million in 15 years.

II. On the basis of these conclusions the Committee proposes two programs, the objectives of which are complementary and inter-related:

A. A **student honors program** designed to focus attention on careers in medicine, to attract a substantial group of able students to prepare for admission to medical school, and (with a built-in scholarship plan) to assist financially a limited number of outstanding students (selected on a geographic basis) who for financial reasons are unable to pursue an education for a career in medicine.

B. A **student loan program** designed to alleviate the financial difficulties of medical students and encourage career decisions in favor of medicine by utilizing the principle of a security fund functioning as a cosigning agency to make available through community banks relatively large sums of credit at a low rate of interest to medical students.

From the American Medical
Association House of
Delegates

From Washington Office American Medical Association

Election of Sen. John F. Kennedy as President made it probable that the issue of providing health care for the aged under Social Security again will be raised in Congress next year.

Kennedy will go into the White House pledged "to the immediate enactment of a program of medical care for the aged through Social Security." His intentions present a serious challenge to the nation's physicians who have vigorously opposed use of the Social Security system to provide health care for the aged.

Kennedy's program would provide what he described as "a life policy of paid-up medical insurance" for older persons. "It would provide them hospital benefits, nursing home benefits and X-rays and

laboratory tests on an out-patient basis," he said in his campaign for the Presidency.

He said the Kerr-Mills legislation enacted into law last summer is inadequate. The medical profession supports this federal-state program to provide health care for needy and near-needy aged persons. In approving the Kerr-Mills program, Congress rejected the Social Security approach espoused by Kennedy and union labor leaders.

Kennedy's medical program also included: federal grants for construction, expansion and modernization of medical, dental and public health schools; federal loans and scholarships for medical students; federal grants for renovating older hospitals; increased federal financial support for medical research, including basic research, and expansion of federal programs for rehabilitation of handicapped or disabled persons.

Food and Drug Administration employees have been cleared of conflict-of-interest charges brought up in the Senate Antitrust and Monopoly Subcommittee's investigation of the drug industry.

A three-member investigating group appointed by Arthur S. Flemming, Secretary of Health, Education and Welfare, examined the financial records of 900 FDA employees. The special investigators then reported:

"On the basis of all the evidence before us, it is our judgment that there are no present employees of the FDA whose sources of personal income are incompatible with their government employment."

The charges were triggered by disclosure at the Subcommittee investigation that Dr. Henry A. Welch, Director of the FDA's Antibiotics Division, had received \$287,000 over eight years as a writer and editor for antibiotics publications. After the disclosure, Flemming ousted Welch from the government post.

The Federal Children's Bureau reported that the infant death rate in the United States has declined since 1958 but still shows the effect of a 1957-'58 setback.

There was a steady decline in U. S. infant deaths during the 1950's but increases in

FEATURES

1957 and 1958. Since then, the infant death rate has headed downward again but still hasn't made up the lost ground, even though the provisional rates for 1959 (26.4 deaths under one year per 1,000 live births) and the first half of 1960 (25.9 per 1,000) showed improvements.

In 1915, when data were first gathered on infant mortality in this country, the rate was 99.9 per 1,000. By 1940, this had been cut to 47 and by 1950, it had been reduced to 29.2.

An all-time low of 26 was registered in 1956. It edged up to 26.3 in 1957 and 27.1 in 1958.

According to the 1959 United Nations Demographic Yearbook, nine other countries reported lower infant mortality rates than the United States in 1958. They were: Sweden 15.8, Netherlands 17.2, Australia 20.5, Norway 20.5, Switzerland 22.2, United Kingdom 23.3, Denmark 23.4, New Zealand 23.4 and Finland 24.5.

Russia reported a rate of 81 in 1950 and 40.6 in 1957, latest year for which data were reported.

Persons with heart and blood vessel diseases have been urged to consult their physicians about routine vaccination against influenza.

In a joint statement, the American Heart Association and the National Heart Institute of the U. S. Public Health Service said that "evidence of the past three years abundantly confirmed that dangers of influenza are much greater for patients with heart or lung disease than for others." The risk was described as "particularly high for those with lung congestion due to heart disease."

The joint statement added that three recent influenza epidemics had "again emphasized the fact that individuals with cardiovascular or pulmonary disease are more susceptible to the hazards of influenza than is the general population." The epidemics were in the fall of 1957, the spring in 1958 and early this year.

The increased risk was shown both by more severe illness and by higher fatality rates among patients with heart and blood vessel disease, the statement said.

The association and the Federal agency said influenza virus vaccine had been

shown "of definite value" in preventing the disease. Side reactions were reported as "extremely few."

* * *

Dr. Heinz Lord, a practicing surgeon of Barnesville, Ohio has been elected by the General Assembly to succeed Dr. Louis H. Bauer of New York City as Secretary General of The World Medical Association on January 1, 1961.

Dr. Lord is of German and Swiss descent. He was educated in Hamburg, Germany and studied medicine in the Universities of Zurich, Berlin and Hamburg, graduating from Hamburg University in 1942. While working at a Hamburg hospital he was arrested for activity in a resistance movement and confined in a German concentration camp until the end of the war. After his liberation by the advancing British troops he assisted in their search for allied prisoners.

In 1947 Dr. Lord resumed his medical career at the Hamburg-Barmbek General Hospital, and in 1954 he migrated to the United States where he took three additional years of surgical training at the Bridgeport Hospital, Bridgeport, Connecticut. In 1957 he received his license to practice medicine in the United States. He is a Fellow of the International College of Surgeons and a member of the American Medical Association as well as of the Ohio State Medical Society and his county Society.

From the World Medical Association

Answer to What Is Your Diagnosis?

WHAT'S YOUR DIAGNOSIS?

Sixty-seven year old white male. Chronic cough for many years. Examination of the chest revealed scattered crackling sounds and faint breath sounds. The vital capacity was 2.9 liters.

ANSWER: Bilateral generalized cystic bronchiectasis.

X-RAY FEATURES: A film sometime after a bronchogram shows retained oily contrast material within many scattered cystic bronchiectatic structures throughout both lung fields.

ANNOUNCEMENTS

The ninth postgraduate course on Diabetes and Basis Metabolic problems will be held in the auditorium of the School of Medicine, Louisiana State University, New Orleans, Louisiana, January 18-20, 1961. The Jung Hotel will serve as headquarters. The Committee on Professional Education of the American Diabetes Association is responsible for the Course which is being offered in cooperation with the Schools of Medicine of Louisiana State University and Tulane University. The American Academy of General Practice will give 17 hours of Category II Credit for the course. The fee is \$40 for members of the American Diabetes Association and \$75 for non-members. Additional data and registration forms may be secured from the American Diabetes Association.

The IVth International Congress of Allergology will be held at the Hotel Commodore, New York City, October 15-20, 1961. It is anticipated that this will be a large and interesting meeting for all of those concerned with allergic diseases and related fields of immunology. At the main meetings there will be simultaneous translations of all papers in English, French, German and Spanish. Prominent physicians and scientists from all parts of the world have been invited to take part in conferences, symposia and panel discussions. The registration fee for regular members will be \$45.00, for wives \$20.00. Persons interested are requested to obtain additional information from Dr. William B. Sherman, 60 East 58th Street, New York 22, New York.

The California Medical Association has just completed a new study and revision of their relative value manual. The third edition adopted by that Association on September 10, 1960, is available to Arkansas physicians at a price of \$1.00 from the Six Ninety Three Publications, Inc., 693 Sutter Street, San Francisco 2, California.

"The Molecular Basis of Neoplasia" is the theme of the 1961 symposium on fundamental cancer research, sponsored

by The University of Texas M. D. Anderson Hospital and Tumor Institute. The sessions will be held February 23, 24 and 25, 1961. The symposium will consist of 34 presentations by scientists from the United Kingdom, Austria, Israel and the United States. Programs and information on the meeting may be obtained by writing the Publications Department, The University of Texas M. D. Anderson Hospital and Tumor Institute, Texas Medical Center, Houston 25, Texas.

The University of Texas Postgraduate School of Medicine announces the Second annual Contact Lens Course, scheduled for April 19-21, 1961 in Houston, Texas. Instructors for this course are ophthalmologists skilled in this field, and experienced teachers. This course is designed so that those completing it will be proficient in all phases of contact lens fitting and adjusting. A departure in the teaching technique will be the use of closed circuit television during the didactic part of the course.

The course will be limited to 35 board certified ophthalmologists or residents and fellows in ophthalmology. Registration for this course will close February 28, 1961.

For further information write: Office of the Dean, The University of Texas Postgraduate School of Medicine, 410 Jesse Jones Library Building, Texas Medical Center, Houston 25, Texas.

American College of Allergists Graduate Instructional Course and Seventeenth Annual Congress will be held March 12-17, 1961 at the Statler Hilton, Dallas, Texas. For information write: John D. Gillaspie, M. D., Treasurer, 2141 14th Street, Boulder, Colorado.

The Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Virginia will hold its thirty-fourth Annual spring Congress in Ophthalmology and Otolaryngology and allied specialties, April 10-15, 1961. There will be twenty guest speakers and fifty lectures.

The annual Cardiovascular Seminar sponsored by the Northeast Florida Heart Association will be held at the Prudential Auditorium, Jacksonville, Florida, January

26-28, 1961. Further details and programs may be obtained by writing Daniel R. Usdin, M. D., President, 1628 San Marco Blvd., Jacksonville 7, Florida.

Contributors to the American Medical Education Foundation from the State of Arkansas during October 1960:

Dr. Wm. H. Breit, Harrison	\$ 4.00
Dr. John E. Gill, Texarkana	25.00
Dr. C. W. Parkerson, Hot Springs	10.00
Boone County Woman's Auxiliary	10.00
Craighead-Poinsett County Auxiliary	5.00
	<hr/> \$54.00

Obituary

Dr. John F. Rowland of Hot Springs died at 90 years of age on October 2, 1960. He was the oldest member and a former president of the Garland County Medical Society. Ill health had forced his retirement two decades ago. Survivors include his wife, Mrs. Lillian Rowland; two sons, Dr. Driver Rowland of Hot Springs and John Elton Rowland of Millbrow, California, a daughter, Mrs. O. N. Mitchell of Blytheville; two sisters, nine grandchildren and one great-grandchild.

Funeral services for **Dr. James W. Leatherman**, 43, were held October 11, 1960, at St. Luke's Episcopal church in Hot Springs. He was a native of Hot Springs and graduated from the University of Tennessee School of Medicine. He was a member of the Hot Springs-Garland County Medical Society, the Arkansas Medical Society, the American Medical Association, and the American College of Physicians. He was also a diplomate of the American Board of Internal Medicine.

Dr. Leatherman is survived by his wife, Eleanor, one daughter, Martha, two sons, James, Jr., and Thomas all of Hot Springs, and one brother, Leland Leatherman, Little Rock.

PERSONAL AND NEWS ITEMS

Dr. Andrew L. Pringos of Little Rock was re-elected president of the Arkansas Heart Association during the annual meeting in Little Rock in September. Other officers are **Mrs. Mason G. Lawson** of Little Rock, chairman of the board; **Dr. G. H. Butler** of Fayetteville, vice president and **Mrs. Peyton E. Rice** of Little Rock, treasurer.

Dr. Hayden H. Donahue, assistant superintendent, Arkansas State Hospital, attended the meeting of the planning board of the White House Conference on Aging in Washington, D. C. in September. The conference will meet in January, 1961. Dr. Donahue is a member of the national planning committee and is also co-chairman of the mental health section on aging with **Dr. Mathew Ross**, medical director of the American Psychiatric Association.

Dr. Granville L. Jones, Superintendent, announced the appointment of **Dr. John W. Cole** as part-time physician at the Benton Unit of the State Hospital effective October 1. **Dr. Cole** has engaged in private practice in Sheridan for seven years, and has been in private practice in Malvern for the past 13 years. **Dr. and Mrs. Cole** and their two sons and two daughters live in Malvern.

Dr. William A. Woodcock, for the past three years medical director of Maynard McDougall Memorial hospital in Nome, Alaska, has completed that assignment and has returned to Hot Springs to resume private practice. The Nome hospital, staffed by **Dr. Woodcock** and 10 graduate nurses, is owned and operated by the Methodist Church, and serves a population of around 5,000—30% white and 70% Eskimos—residing within a radius of 500 miles. Dr. Woodcock was the only physician and surgeon.

Dr. A. L. Peacock, 90, of Gentry, who is still in active practice, recently made the remark that "I would not have traded a

day of my life's work for any one's job." He moved to Gentry in 1927 and bought a drugstore with the intention of retiring from his practice and devoting his time to the drugstore. However, his practice grew so large that within three years he sold the store and opened an office next door to his home.

On October 20th **Dr. J. Harry Hayes** of Little Rock appeared before the Pulaski County Medical Assistants Society and spoke on "Points of Thyroid Diseases." **Dr. Hayes** has practiced in the fields of thyroid and general surgery in Little Rock since 1934.

The University of Arkansas Medical School sponsored a post-graduate course for physicians of Southeast Arkansas on November 10. The meeting was held in McGehee. An outstanding program was presented by the following speakers: **Dr. John Evans**, professor of Medicine, George Washington University, Washington, D. C.; **Dr. Howard Barnhard**, professor and head of Radiology Department, University of Arkansas; **Dr. Richard Ebert**, professor and head of Medicine Department, University of Arkansas; **Dr. James Growden**, professor and head of Surgery Department, University of Arkansas and **Dr. James Taylor**, professor of Medicine, University of Arkansas.

Dr. James W. Sanders has been appointed Pediatric Clinician for the Well Child Conference, held monthly at Tuckerman and Swifton, through the State Board of Health.

Dr. F. Douglas Lawrason, provost and dean of the University Medical Center since 1955, resigned in November to take the position of executive medical director of Merck and Company, Inc., a pharmaceutical and chemical firm of New Jersey. He will assume his new job sometime after the first of the year.

Proceedings of Societies

The regional meeting of the Arkansas Chapter of the American Academy of General Practitioners was held November 9 at the Magnolia Inn in Magnolia. **Dr. John McCallum Evans** of the George Washington University School of Medicine, Washington, D. C., **Dr. Howard J. Barnard**, **Dr. Richard V. Ebert**, **Dr. James H. Gowdon** and **Dr. James S. Taylor**, all of the University of Arkansas Medical Center, Little Rock, were the guest faculty for the day's program of study.

A similar regional meeting for Southeast Arkansas physicians was held in McGehee on November 10. The same faculty that appeared on the Magnolia Seminar participated in the seminar at McGehee.

The Arkansas Academy of General Practice met in Little Rock in October for its 13th annual meeting. Officers elected at that time were: **Dr. Louis A. Whittaker, Jr.** of Fort Smith, president, succeeding **Dr. Guy R. Farris** of Little Rock; **Dr. C. Lewis Hyatt** of Monticello, president-elect; **Dr. Ross Maynard** of Pine Bluff, vice president; **Dr. T. D. Honeycutt** of Little Rock, secretary-treasurer; **Dr. James M. Kolb** and **Dr. Guy Shrigley**, both of Clarksville, delegate and alternate delegate respectively to the American Academy of General Practice. **Drs. A. E. Andrews** of Paragould, **J. P. Price** of Magnolia, **James W. Branch** of Hope and **John Busby** of Little Rock were elected to Board positions.

A cancer seminar was held in Fort Smith at Holiday Inn early in November, sponsored by the American Cancer Society in cooperation with the Sebastian County Medical Society and the Arkansas Academy of General Practice. **Dr. Edmund R. Novak** of Johns Hopkins Hospital at Baltimore, **Dr. C. Alan McAfee**, staff surgeon, Barnes Hospital and Washington University School of Medicine, **Dr. S. William Ross**, associate professor of medicine University of Arkansas Medical School, and **Jacob Shapira, Ph.D.**, assistant clinical professor, University of Arkansas

and principal scientist of the Veterans administration Hospital, Little Rock were the speakers for the seminar.

A last-resort cancer drug was explained to Arkansas physicians by Dr. Fred J. Ansfield, assistant professor of surgery at the Cancer Research Hospital, University of Wisconsin, at a seminar held at Coachman's Inn, Little Rock, in October. The relatively new drug does not produce a cure of cancer, but shrinks cancers that can't be effectively treated in any other way. Because of its extreme toxicity, only those physicians who have had competent instruction in its usage are provided with supplies. Dr. Ansfield was sponsored by the Arkansas Cancer Commission.

New Members . . .

Dr. Lawrence G. Pillstrom is a new member of the Benton County Medical Society. He is a native of Sugar City, Colorado, and received his preliminary education from the University of Arkansas at Fayetteville, from which he received a B.S. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1958. He did general practice residency at the University of Arkansas Medical Center in Little Rock from 1958-1960. Dr. Pillstrom is a general practitioner and has opened his office at 101 So. 12th, Rogers, Arkansas.

A new member of the Mississippi County Medical Society is Dr. E. H. Ball. Dr. Ball is a native of Portageville, Missouri; he received his preliminary education from the college of Pharmacy and Allied Science at St. Louis, Missouri, from which he received a B.S. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1959. Dr. Ball is a general practitioner with his office at 1204 Hearn Street, Blytheville, Arkansas.

Dr. Irving Kuperman is a new member of the Pulaski County Medical Society. He is a native of Chicago, Illinois, and received his preliminary education at the

University of Illinois from which he received a B.S. degree. He was graduated from the University of Illinois College of Medicine in 1953. Dr. Kuperman was in Obstetrics and Gynecology training at the University Hospital, Baltimore, Maryland, 1957-1960. He holds the following positions: Instructor, University Hospital; Associate Medical Staff, St. Vincent's Hospital; Associate Medical Staff, Baptist Hospital. Dr. Kuperman's office is 5300 Mabelvale Pike, Little Rock.

Letters to the Editor

September 26, 1960

To The Members of The Arkansas Medical Society;

On April 15, 1960, just two days before the opening of the Annual Session of the Arkansas Medical Society in Pine Bluff, history repeated itself. It was the second time that the President of our Society was unable to attend our Annual Session. The first was in 1928, when President Henry Thibault was unable to attend the Annual Session in El Dorado, May 1st, 2nd and 3rd.

The inability to be present at our Annual Session was a disappointment to me which can not be described by words but was appeased by the thought that the Council, Officers and Members of the House of Delegates would carry on in their traditional manner of dignity and efficiency.

I am very grateful for the many cards, flowers, words of encouragement and messages received from you.

I am pleased to report that I am able to be back on the Job. I will continue to support the Arkansas Medical Society and its Officers to the best of my ability.

With best regards to each of you.

James M. Kolb Sr., M.D.

JMK-GL

CORRECTION

"A Physician's Approach to the Problem of Aging"

In the November issue of the Journal the paper by Dr. Louis F. Rittelmeyer, Jr., was erroneously footnoted as "presented at the Arkansas Academy of Pediatrics." This should have read "presented at the Arkansas Academy of General Practice meeting October 14-15, 1959."

Woman's Auxiliary

Mrs. Clifton C. Long, State President of the Medical Auxiliary was the guest speaker at the Garland County Medical Auxiliary luncheon at the Hot Springs Country Club in October.

The Woman's Auxiliary to the Pulaski County Medical Society inaugurated its 1960-61 season with a luncheon meeting at the Dr. Charles M. Taylor Memorial Home at noon, October 19. Hostesses were Mrs. Frank M. Bauer Jr., chairman; Mrs. Joseph P. Ward, Mrs. Travis Crews, Mrs. George Holitik and Mrs. Edwin Mathis. Committees for the year were announced at that time.

Book Reviews

AMINO ACIDS AND PEPTIDES WITH ANTI-METABOLIC ACTIVITY: A CIBA Foundation Symposium; Editors, G. E. W. Wolstenholme, O.B.E., M.A., M.B., B.Ch. and Cecilia M. O'Connor, B.Sc.; 1958; Illustrated; Pp. 286; Little, Brown and Company, Boston.

The reports collected in this CIBA Symposium give encouragement to the physician who is in the practice of medicine and who faces the problem, not infrequently of informing the cancer patient that there is no magic cure for cancer.

These discussions on antimetabolic chemicals bring up to date the modern research being done in this field. The use of sarcosyl and dopan and other compounds is presented. Their field of usefulness is not large in themselves but these and

similar anti-tumor substances are clearly the bridges that must be crossed to reach the desirable goal of treatment of cancer by chemicals.

The text is of interest to any student of the biological sciences but its most important place is in the library of the research biochemist. FR

COLD INJURY, GROUND TYPE: Tom F. Whayne, Colonel, M.D., U.S.A., (Ret.) Professor of Preventative Medicine, University of Pennsylvania, Philadelphia, and Michael E. De Bakey, M.D., Professor of Surgery, Baylor University College of Medicine, Houston. Illustrated, Pp. 570. U.S. Government Printing Office, \$6.25.

This volume is one of the series of records being made by the Historical unit of the Medical Department of the U.S. Army. It is, as Surgeon General Silas B. Hays says, in his Foreword, "the most comprehensive volume of the ground type of cold injury that has ever been published." Not only is the history of frost bite and trench foot included, but the prevention of the maladies is thoroughly explored both from the Command function and the responsibility of the Medical Department.

Not only do the authors go into considerable detail to record the reasons for an undue amount of trench foot occurring in U.S. troops, they include prophylaxis and definite treatment of the condition.

An excellent historical record, this book could also be used as a text book for the study and treatment of trench foot and frost bite. It is a valuable reference work to any physician, those who look to the field of preventive medicine and to those who are looking for the latest methods of treatment. FR

BIOSYNTHESIS OF TERPENES AND STEROLS. CIBA Foundation Symposium edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., B.Ch. and Cecilia M. O'Connor, B.Sc. Illustrated, Pp. 302, 1959. Little, Brown and Company, Boston, \$8.75.

This CIBA Symposium is intended principally for the physician interested in research. It will be of some value to the internist; for example, there is an excellent chapter on bile acids and their formation and metabolism. The chapter on liver enzyme systems is also of some interest to the internist. Generally, the book seems well written, but of extremely limited application. It is recommended as a reference text for those interested in very complex chemistry. AKJ

CARDIAC EMERGENCIES by Harold D. Levine, M.D., Senior Associate in Medicine, Peter Bent Brigham Hospital, Boston, Mass. Assistant Clinical Professor of Medicine, Harvard Medical School, Pp. 381, illustrated, published by Landsberger Medical Books, Inc., New York, 1960.

This short textbook is interesting and is the result of considerable clinical experience. The Department of Cardiology at the Peter Bent Brigham Hospital has always stressed clinical observation and bedside teaching; this book is the result of this

system of teaching. It is easy to read and is more a narrative than many textbooks. It does not contain as many illustrations as might be desired; this book does not contain any information not currently available in the standard textbooks of cardiology.

This book is recommended as ancillary reading for the general physician and internist. AK

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

RESULTS OF THE TREATMENT OF TUBERCULOSIS BEFORE AND SINCE THE INTRODUCTION OF CHEMOTHERAPY

The prognosis of many forms of tuberculosis is greatly improved when at least two drugs are administered for a period of eighteen months. Relapse is also less frequent than in the prechemotherapy era.

The proper administration of chemotherapy has led to a striking improvement in the outcome of the treatment of tuberculosis. If, however, patients with active disease have received inadequate chemotherapy, the cure rate will be lower and the relapse rate higher. All new cases of active tuberculosis, irrespective of the site, should receive combined continuous chemotherapy for about 18 months or longer. Bed rest is indicated during the early active phase and, in certain selected cases, surgical measures are also necessary.

Three antimicrobial agents have proved to be of great value, namely, isoniazid, streptomycin, and para-aminosalicylic acid (PAS). It is generally agreed that these drugs should not be prescribed alone, but should be given in a combination of at least two. If any one of them alone is prescribed to a patient with open cavitory disease, the tubercle bacilli in the host rapidly develop resistance to the drug, so that it is no longer effective in combating the tuberculous infection. If, on the other hand, two or all three of the antimicrobial agents are given

concurrently, the development of resistance by the tubercle bacilli to the drugs administered is markedly delayed, and the drugs continue to be effective in combating the infection for a much longer period.

ISONIAZID ESSENTIAL

Although there is not much difference in the effect of the different combinations, it is generally agreed that isoniazid should be one of the drugs given. It has established itself as the most powerful agent in the treatment of tuberculosis.

In assessing the results of the modern treatment of such a chronic disease as tuberculosis, we are handicapped by the fact that adequate chemotherapy, as we know it, has been in use for little more than seven years—insufficient time for an adequate long-term follow-up. However, since relapses usually occur within a period of five years, the results here reported should be a fair indication of the ultimate prognosis.

Before antimicrobial therapy was available, the mortality rate of active pulmonary tuberculosis was estimated to range from 5 per cent in minimal cases to 20 per cent in moderately advanced disease and to 70 per cent in far advanced. The majority of patients with persistent cavitation died within five years.

Modern treatment has resulted in a striking reduction in mortality and relapse rates. At the Toronto Hospital for Tuberculosis we have analyzed the results of treatment of all patients with active pulmonary tuberculosis who were admitted to that hospital in 1953, who had sputum positive for tubercle bacilli, who had not been given antimicrobial therapy before, and who were administered streptomycin, isoniazid, and PAS continuously for at least nine months. The average duration of triple-drug therapy given to the 140 patients in the series was 17 months.

At the end of five years, six patients had died, or 4 per cent of the total. All the deaths were in the far advanced group. With adequate chemotherapy, and resectional surgery where indicated, the mortality was strikingly reduced as compared with the prechemotherapy estimates of from 5 per cent (minimal) to 70 per cent (far advanced).

H. E. PUGSLEY, M.D.; E. A. ALLEN, M.B., Ch.B.; O. T. CHEUNG, M.B.; H. S. COULTHARD, M.B., and G. L. GALE, M.B., *The Canadian Medical Association Journal*, August 27, 1960.

FEATURES

Of the 25 cases of minimal tuberculosis in the series, 100 per cent had attained inactive status by the end of two years, while 97 per cent of 61 moderately advanced cases had become inactive by the end of three years, and 81 per cent of 54 far advanced cases had become inactive by the end of three years. (Inactive, as defined by the National Tuberculosis Association, means that the following conditions had been met for at least six months: repeated examinations of the sputum or fasting gastric contents are negative for tubercle bacilli on culture; the chest radiographs have remained stable in appearance, and there is no evidence of cavitation.) It is evident that if cases of minimal or moderately advanced disease are adequately treated with drugs, one can be confident that the process will in almost all cases become inactive within two years. With far advanced disease, however, a favorable outcome is less certain.

RELAPSES

In an attempt to find out how many patients relapse after attaining an inactive status, 125 of the 140 cases were followed from two to five years. It was found that 4 per cent had relapsed in the period of follow-up. In a series of 900 cases treated without chemotherapy, or inadequate chemotherapy, reported by the Veterans Administration Hospital, Memphis, Tenn., 30 per cent had relapsed at the end of three years. The 4 per cent figure has also been reported by the Fitzsimons Army Hospital, Denver, for 2,500 patients adequately treated with drugs and followed from one to five years.

It must be noted that the presence of a persistent cavity in the lung is always a great menace to the patient, whether he has had chemotherapy or not. The presence of a cavity in the lung that has failed

to close after six to eight months of chemotherapy is the cardinal indication for surgical resection.

In the Toronto Hospital series, pulmonary resection was performed in 31 cases, or 22 per cent. The resection was segmental in 20 cases; a lobectomy was performed in 10 cases, and a pneumonectomy in one case. All these surgically treated cases became inactive; there were no deaths, but one relapse occurred.

Adequate chemotherapy in bone and joint tuberculosis has resulted in a marked reduction in mortality, more rapid subsidence of active disease, decrease in length of hospital stay, and marked reduction in relapse rate. Nearly half the cases are discharged with movable joints.

Four groups of cases of renal tuberculosis have been followed. In the first group of 82 patients who had neither chemotherapy nor nephrectomy, 58 per cent died of tuberculosis. In the next group of 347 cases treated by nephrectomy but without chemotherapy, 46 per cent died of tuberculosis. Inadequate chemotherapy in 175 cases led to a moderate reduction of mortality, but in the last group of 163 cases, adequate chemotherapy resulted in a striking reduction in the mortality to 1 per cent and a relapse occurred in only 1 per cent of this group.

SUMMARY

The outcome of modern treatment has been compared with that before the use of chemotherapy. Although the follow-up period is not long enough for final assessment, it is evident that combined continuous administration of isoniazid with PAS or with streptomycin, or all three drugs, for 18 months or longer, has resulted in a striking reduction in the mortality rate and improvement in the relapse rate.

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Restoration of Function to the Severely Injured Hand*

ARTHUR H. STEIN, JR., M.D.**

When the human hand is subjected to injury from the blast of a shotgun at close range, the sharp cutting edges of various power-driven wood-working tools, or the injudicious management of a corn-picker, the end-result is often massive and severe trauma to the hand. Such injuries are complex, in that they involve damage to skin, bone, tendons, and, last but not least, the delicate nerve structures so important to the function of the hand. The surgeon who initiates the treatment of the severely injured hand sets the stage for successful or unsuccessful later reconstructive operations. If the initial management of these injuries is carefully and prudently carried out, many such severely injured hands can be at least partly restored to a satisfactory functional capacity.

The most important aspect in caring for the injured hand is the proper initial management of the wound. If the initial management of the wound is complicated by delayed healing or infection, the entire problem is complicated, often to such a degree that any further reconstructive work may become impossible.

The early management must be directed toward careful and adequate debridement of the wound. In most instances where the hand has been severely traumatized, no attention should be given to reconstruction of tendons or nerves at the initial debridement. This aspect of reconstruction of the hand should be left to

secondary procedures after initial cleansing and treatment of the wound has led to sound healing of the damaged tissues (Fig. No. 1). Devitalized areas of skin must be removed. Frayed and devitalized ends of nerves and tendons must also be debrided. Devitalized skeletal muscle requires complete excision, for if it is allowed to remain, it is the perfect medium for severe infection — the worst enemy of the hand surgeon.

Debridement of such injuries is best carried out in the operating room, and if possible, under a general anesthetic. X-ray examination of the hand should always be done prior to surgical debridement. Many times unsuspected fractures are revealed. Even more important than the fractures, foreign bodies retained within the hand can often be visualized by means of X-ray, and thus will not be overlooked at the time of initial debridement.

Control of bleeding when working in the hand is mandatory, and is best accomplished by use of a pneumatic tourniquet applied around the brachium. When the patient is taken to the operating room, the tourniquet can be applied before the dressings are removed from the hand. This will prevent considerable blood loss during shaving and cleansing of the skin prior to debridement of tissue. After proper cleansing of the skin and sterile draping, the wound should be irrigated with copious quantities of saline solution. After all clots have been removed, and hemostasis has been maintained, an ade-

*From the Department of Orthopedic Surgery, Washington University School of Medicine, St. Louis, Missouri.

**Assistant Professor of Orthopedic Surgery.

quate assessment of the damaged structures can be made. Following removal of all devitalized tissue, the tourniquet should be released in order to achieve local hemostasis within the wound. Release of the tourniquet will also give the surgeon valuable information as to the viability of skin flaps. Those skin flaps which do not blush within the first 60 seconds of releasing the tourniquet, have a seriously impaired blood supply, and if not removed at the debridement will slough within the first few days.

Primary wound closure should be carried out only when the injury has been debrided within four to six hours, and when the surgeon is confident that the wound is clean and that viable skin can be brought together without tension. Sometimes a primary split graft will be helpful to fill a defect if primary closure is to be attempted (Fig. No. 2). In the severely injured hand, this set of circumstances seldom exists, and in most instances it is far safer to allow the wound to remain open at the time of initial surgical debridement. Dry, fine-mesh gauze applied to the open surfaces is the best type of packing material. The use of vaseline gauze is contra-indicated, since the vaseline is likely to be irritating to the tissue and thereby increase scar formation as healing progresses. A large, bulky pressure dressing is applied to the hand with the digits being placed in a position of function. After the bulky dressing has been applied, immobilization in a long-arm plaster cast frequently helps to maintain stability of the injured extremity during the initial phases of the healing response.

Such a dressing should be allowed to remain in place for approximately 5 days. During this period, antibiotic therapy, as well as immunization against tetanus, is carried out. If the debridement has been adequate and infection has been avoided, we should anticipate that the patient's pain, fever and pulse will gradually decline. The only indications for disturbing the dressing before the 5-day period has passed is increasing pain, a rising pulse rate, or increasing fever. These are the

systemic signs of infection and demand inspection of the wound.

Five to six days after the initial debridement, the wound should be inspected in the operating room under a general anesthetic. If the debridement has been well carried out, there should be no evidence of suppuration or retained devitalized tissue. At this stage, granulation tissue should be absent and the so-called delayed primary closure may be accomplished. The delayed closure should be carried out before the appearance of granulation if healing is to occur with the minimum of scar formation. Where flaps of skin will fit together without tension, closure should be accomplished by suturing these flaps. In many of these severely injured hands there will be a significant loss of skin which will require some type of skin grafting. The split-thickness skin graft is the safest and best method of achieving a healed wound at this stage. Split grafts from the thigh should be taken and applied to all open surfaces that have not been closed by means of full-thickness skin (Fig. No. 1). A pressure dressing with plaster cast immobilization is maintained until all wounds have healed. When all skin wounds and split-thickness grafts have healed without evidence of infection, treatment of the wound has been satisfactorily accomplished. Only when this stage has been reached should the surgeon turn his attention to the second problem of the injured hand—restoration of function.

Faced with restoring function to the hand that has had satisfactory initial management, the problem involves reconstruction of the significant missing parts. The order of restoration of these parts should be:

- 1) Adequate definitive skin coverage
- 2) Stabilization of the bony framework of the hand
- 3) Mobilization of the joints
- 4) Reconstruction of damaged nerves within the hand
- 5) Reconstruction of the important missing tendons

Figure No. 1

Extensive and dirty lacerations such as this truck driver received when he was thrown from the truck are best managed by careful and complete debridement. Primary repair of tendons and nerves should not be done. Delayed primary closure can be done if the wound is clean in five to six days—before appearance of granulation tissue.

At the time of closure the split thickness skin graft is perfect to replace areas of skin loss. On the dorsum of the hand it may serve as definitive coverage if tendon reconstruction is not necessary.

Treatment of the wound is of prime importance—restoration of function comes later.

- A) Laceration over the dorsum of the hand.
- B) Volar continuation of laceration. Sublimus muscle bellies protrude from wound and required almost complete extirpation.
- C) Delayed closure was done in six days. Large split graft used to cover the dorsum of wrist and hand. Illustration is 10 days after closure with almost no loss of grafted skin.



1-A



1-B



1-C

SKIN

No reconstructive work within the hand can be accomplished unless there is adequate skin coverage. The split-graft, which may have been used during the stage of delayed primary closure, will be satisfactory definitive coverage over the dorsum of the hand and the dorsum of the finger in many instances. If, however, reconstructive surgery on the dorsum of the hand is anticipated in the form of tendon graft or tendon repair, the split-thickness skin graft is seldom satisfactory. If tendons must be replaced on the dorsal surface of the hand a pedicle graft is almost essential. The repaired or replaced tendons require the subcutaneous tissue to slide through—they will not slide through a bed of scar. On the palmar surface of the hand and the palmar surface of the finger, the split-thickness skin graft over a large area is not good coverage for the work surface of the hand. It certainly is unsatisfactory if reconstructive work on nerves or tendons must be accomplished on the volar aspect of the wrist or hand. Frequently, a local pedicle graft from the dorsal surface of the hand may be swung around to the volar aspect to give better definitive coverage on the volar aspect of the wrist. If such local pedicles from the dorsal surface of the finger or from the dorsal surface of the hand are not available, then abdominal pedicle grafts are essential prior to reconstruction of bones, nerves and tendons (Fig. No. 3). Though the abdominal pedicle graft requires multiple operations and is time-consuming for the patient, it is mandatory to have adequate skin coverage of the hand where one anticipates nerve, tendon or bone reconstruction.

BONE RECONSTRUCTION

The next aspect of reconstructive surgery to the severely injured hand is to provide a stable framework within the hand for the muscles and tendons to work against. In severely injured hands, reconstruction and bone repair work can often offer serious and difficult problems. In the initial phases of wound treatment, there are occasions when the surgeon should direct his attention to fractures

RESTORATION OF FUNCTION TO THE SEVERELY INJURED HAND

Figure No. 2

This hand was crushed by a conveyor table.

- A) Initial state of hand. There was complete loss of the extensor hood to the long and ring finger with destruction of the interphalangeal joint.
- B) Careful debridement followed by primary arthrodesis of the destroyed joints at 40° flexion and split graft coverage to areas of skin loss was the method of management. Arthrodesis is applicable to the interphalangeal joints while arthroplasty to preserve motion at the meta-carpo-phalangeal joints is the procedure of choice for damaged joints.
- C) Eight weeks after injury all wounds were healed. The wires are removed when solid bony union has taken place.



2-A



2-B



2-C

within the hand. At the time of debridement some attention should be paid to aligning as nearly as possible fractures within the hand. Often, with a little care and judicious management, fractures can be accurately reduced and held by means of the pressure dressing and plaster splinting at the time of the initial debridement. If some thought is given to the proper alignment of fractures at the time of debridement, much difficulty and later reconstructive bone work may be avoided.

In some severe injuries, there is extensive loss of bone structure so that the hand may be connected to the forearm principally by means of soft tissue. Under such circumstances, stabilization of the hand on the distal end of the forearm by means of multiple Kirschner wire

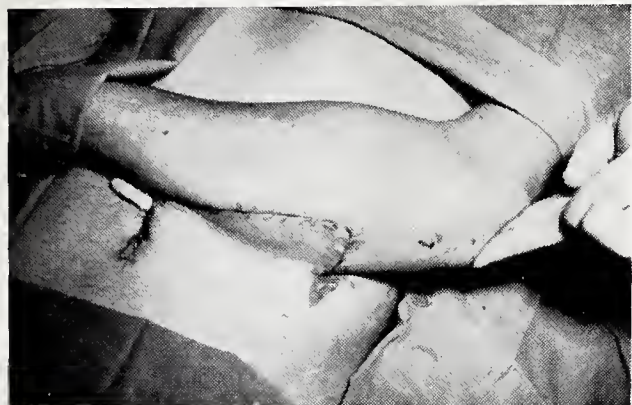
Figure No. 3

Pedicle grafts are frequently required to cover large areas of skin loss where further reconstruction of bone, tendons and nerves must be done.

- A) Large forearm defect. Median and ulnar nerves have been lost and will require reconstruction later.
- B) Abdominal pedicle sutured to one edge of forearm defect.
- C) Forearm immobilized against abdomen for three weeks before cutting across base of graft to complete the transfer.
- D) Two months after completion of graft the pedicle is well established and pliable.



3-A



3-B

fixation at the time of primary debridement is efficacious. Such stabilization of the hand should be done when it will help to immobilize the soft tissue, thereby affording better rest and protection for soft tissue healing (Fig. No. 4).

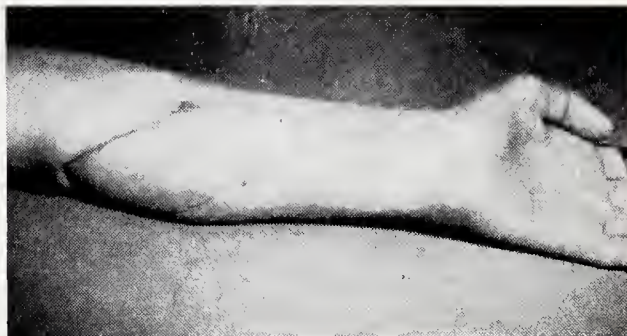
Where severe bony deformity exists in the form of mal-union or non-union, these deformities must be corrected before tendon reconstruction is undertaken (Fig. No. 5 and Fig. No. 6). In situations where there has been a massive loss of bony structure, bone grafting procedures are often indicated in order to stabilize the framework of the hand. An example of extensive bone reconstruction is illustrated in Figure No. 7.

JOINT MOBILIZATION OR STABILIZATION

As pointed out by Bunnell, the wrist joint and the metacarpophalangeal joints are the key joints to good hand function. Arthrodesis of these two joints should seldom be done if there is any way of maintaining motion. Arthrodesis of the distal interphalangeal joint, and arthrodesis of the proximal interphalangeal joint, are frequently satisfactory reconstructive procedures to place the finger in a position of function (Fig. No. 2). In instances where the joint surfaces have not been damaged, and the stiffness is due to collateral ligament contracture,



3-C



3-D

RESTORATION OF FUNCTION TO THE SEVERELY INJURED HAND

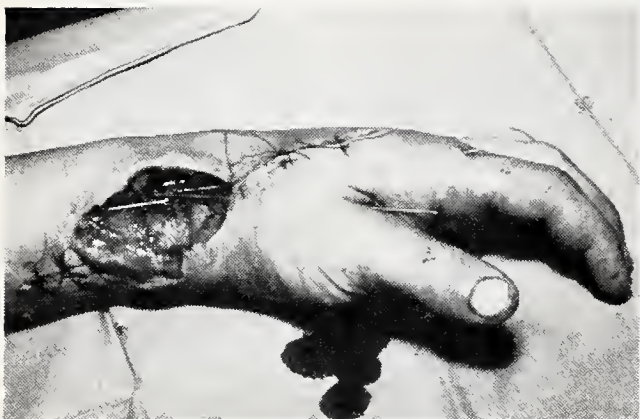
Figure No. 4

This hand injury is the result of a shotgun blast. The illustrations show the wounds 5 days after debridement. Note the Kirschner wires were used primarily to stabilize the hand on the distal end of the radius. In this instance a few sutures were used to pull the skin together only where the surgeon had extended the lacerations to obtain adequate debridement.

At this stage closure was completed and the wounds healed without infection.



4-A



4-B

every effort should be made to mobilize these joints to obtain a good range of passive function. If, due to collateral ligament contracture, a metacarpo-phalangeal joint will not flex a satisfactory degree passively, we can hardly expect a repaired tendon to flex the joint actively.

Often a finger joint may be mobilized by the use of the Bunnell knuckle bender splint (Fig. No. 8). This is particularly true if the joint contracture has not been of long duration nor is of too severe a nature. When flexion of the finger joints is severely limited, and has been of long duration, operative intervention to mobilize the joint is almost essential. Resection of the collateral ligaments at the metacarpo-phalangeal joint is an excellent

procedure to restore a good range of passive flexion (Fig. No. 9). The operation must be meticulously performed and must be followed by the use of the knuckle

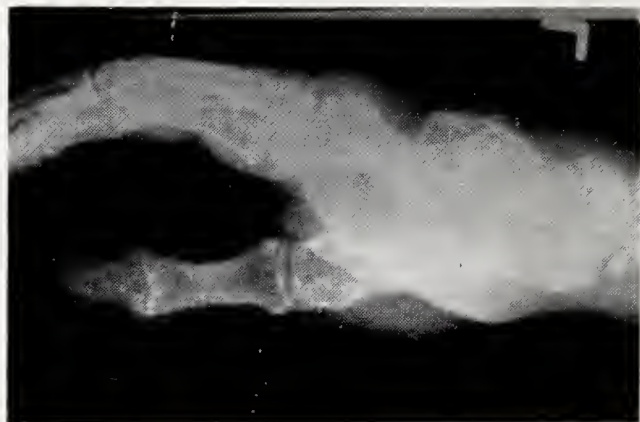
Figure No. 5

Illustrations 5-A and 5-B show the anterior-posterior and lateral films of a compound crushing injury of the hand 9 months after injury. Note the severe mal-position of the metacarpal fracture. Protrusion into the palm was very painful.

Illustrations 5-C and 5-D show the mal-position corrected and maintained with multiple wires. The wires were removed after 8 weeks.



5-A



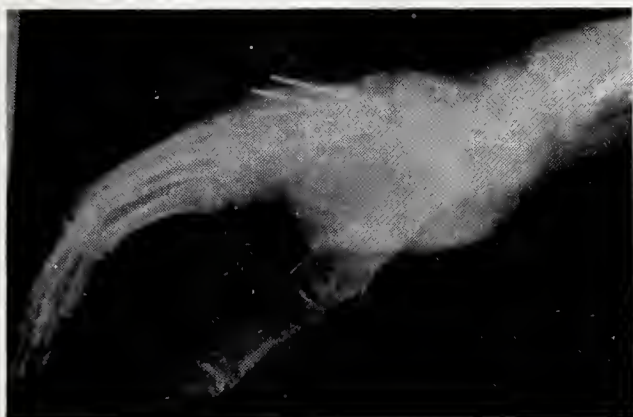
5-B



5-C



6-A



5-D

Figure No. 6

Fractures of the long bones of the hand frequently require open reduction to maintain satisfactory position. Crossed wire fixation with 0.35 mm. K-wires gives rigid fixation. The wires are cut off under the skin and can be removed under local anesthesia in the office. The wires can usually be removed in three weeks after sufficient soft tissue healing has taken place to maintain the reduction.

- A) Initial X-ray shows a non-displaced fracture of the base of the proximal phalanx and a severely displaced fracture of the base of the thumb metacarpal.
- B) Open reduction of the metacarpal fracture with four weeks of plaster cast immobilization resulted in normal functioning thumb.



6-B

Figure No. 7

A massive iliac bone graft was necessary in this hand where metacarpal bases and the distal carpal row was destroyed by a shotgun blast.

A) The pre-graft loss. The 2nd, 3rd, 4th metacarpals were loose and in mal-position.

B) The iliac graft in place and stabilized by multiple fine wires.

C) Four months later the graft was united to the proximal carpal row and to the metacarpals. The wires were removed under local anesthetic at about 6 weeks.



7-A



7-B



7-C

bender splint in the post-operative period. Collateral ligament resection at the proximal interphalangeal joint, if properly performed, can also be very helpful in restoring a reasonable degree of flexion at the proximal interphalangeal joint. It has been considered to be less satisfactory than the metacarpo-phalangeal joint ligament resection, because it is often attended by some lateral instability at the mid-portion of the finger.

NERVES

The common and proper digital nerves in the hand are structures that unfortunately are frequently overlooked, both in

Figure No. 8

- A) The gentle but steady pull of the Bunnell knuckle bender splint will often help increase the range of flexion of the stiffened metacarpophalangeal joint.
- B) The same type of splint designed for the individual fingers may help increase the range of flexion of the proximal interphalangeal joint.



8-A



8-B

Figure No. 9

When fingers are not immobilized in some flexion, collateral ligaments shorten with resulting inability to flex the finger joints. Collateral ligament resection allows the fingers to flex.

- A) Electrical burn of the wrist. One year later all fingers rigid in this hyper-extension deformity at the metacarpophalangeal joints.
- B) Resection of the two collateral ligaments of each finger was done. Shown is the collateral ligament on the radial side of the index finger.
- C) Index finger completed and metacarpophalangeal joint flexes easily. The other three fingers were done at the same operation.
- D) Three months after operation a good range of flexion has been achieved and maintained.

the repair of rather simple injuries to the hand as well as in the repair of complex injuries to the hand. The anesthetic finger becomes trophic and is a relatively useless appendage. Without sensation, a finger is frequently in the way and is constantly a candidate for injury, burns and subsequent infection. The anesthetic finger is hardly worth considering for tendon reconstruction.

Only under the most favorable circumstances should primary nerve repair be done in the hand. When the situation of the wound is such that primary tendon repair is considered feasible, nerve repair



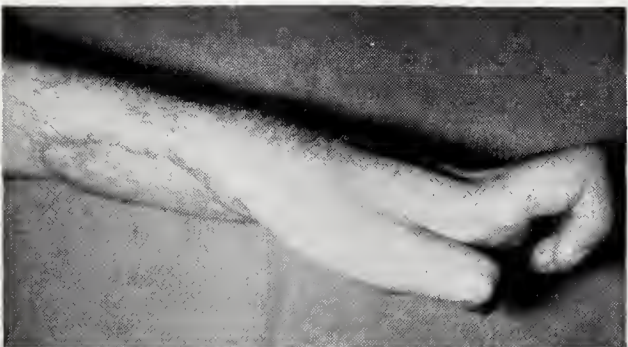
9-B



9-C



9-D



9-A

should also be done at the same time. In fact, nerve repair should have precedence over repair of the tendon (Fig. No. 10).

In individuals who have had a massive injury to the hand, there may be damage to the median nerve, ulnar nerve, or to the more delicate common and proper digital nerves within the hand itself. All of these structures demand surgical repair. Repair of the common digital or proper digital nerve in the hand is just as feasible as repair of the median nerve at the wrist. The same delicate techniques and fine suture material (6-0 silk) should be used. The more careful the repair, the better the chance for return of sensation. One may anticipate, with careful repair of digital nerves, the return



Figure No. 10

Severed long flexor tendons of long finger in palm of hand from porcelain water faucet handle. Anesthesia over adjacent sides of long and ring finger indicate section of the last common digital branch of the median nerve. The wound was clean and only one hour old when first seen. Primary repair of nerve and flexor profundus tendon is indicated. The sublimus tendon is best not repaired at this level.

Figure No. 11

Extensive nerve defects are often encountered and require extensive freeing, transference of position and dissection of motor branches to suture the ends.

- A) A median nerve deficit of 4 inches in the mid-forearm. The ulnar nerve also had a similar loss, but the more important median nerve was reconstituted first.
- B) Freeing the proximal end of the median nerve to the mid-brachium, transferring the proximal end superficial to the two pronator heads and flexion of the elbow allowed nerve suture without tension. Elbow extension was gradually allowed over a period of four months.



11-A



11-B

of protective sensation and a good differentiation between pin-prick, light touch, hot and cold. The two-point discrimination is almost always diminished after the nerve has been repaired. However, any return of sensation is preferable to the completely anesthetic finger (Fig. No. 11).

In instances where there has been a loss of nerve substance so that flexion of the wrist or flexion of the digits will not allow delayed repair of the nerve by end-to-end suture, the autogenous nerve graft is indicated. If carefully done, a rewarding return of sensation to an anesthetic finger can be achieved. The only good autogenous nerve available is the sural nerve. Its size is quite satisfactory for

replacing a segment of a common or proper digital nerve within the palm of the hand (Fig. No. 12).

TENDONS

There has developed a great deal of discussion concerning the advisability of primary or delayed tendon repairs. The consensus of opinion concerning primary tendon repairs is that in certain locations primary tendon repair is indicated, but this of course is dependent upon the nature and the status of the wound. Under no circumstances should tendon repair be attempted in a wound which is doubtful in regard to infection or primary wound healing. Tendon repair should never be accomplished unless there is adequate skin coverage to cover the anastomosis of the tendon.

In relatively clean wounds that are treated within the first 6 to 8 hours of injury, primary repair of the extensor tendons is advisable. From the stand-

point of the anticipated result of primary extensor tendon repair, we can state that the best results occur over the base of the hand, and the good and excellent results decrease as one approaches the metacarpo-phalangeal joint. When the laceration involves various components of the extensor hood, an excellent result can only be anticipated in the cleanest of wounds, and when the component parts of the hood are repaired with meticulous care.

The extensor tendons, heal well but are perhaps a little bit slower in obtaining solid union than the flexor tendons. After primary repair, the position of immobilization should be one of extension at the wrist joint with slight flexion at the metacarpo-phalangeal and the interphalangeal joints of the fingers. Immobilization should be maintained for approximately four weeks, and during the fifth week the repair should be protected by a removable splint. During the fifth week, gentle active exercise should be encouraged on the part of the patient. In instances where there are multiple tendon injuries to the dorsal surface of the hand or wrist, the surgeon should pick out only those tendons that are essential to function for primary or delayed repair. A single extensor tendon to each of the fingers will suffice for finger extension. Of the three wrist extensor tendons, the extensor carpi radialis brevis, being centrally located, is the most important and demands repair. Where there are multiple injuries, one may wisely elect to not repair the extensor carpi ulnaris or the extensor carpi radialis longus. The long extensor tendon to the thumb and the long abductor tendon to the thumb are essential, and should be repaired to expect good function in the thumb. The extensor pollicis brevis may be left unrepaired in multiple extensor tendon injuries.

Primary repair of the flexor tendons depends upon the location of severance of the tendon. The general rule that one may follow is: Above the wrist, repair both the flexor sublimus and the flexor profundus tendons. However, when all structures, including the median and ulnar nerves, are severed at the level of

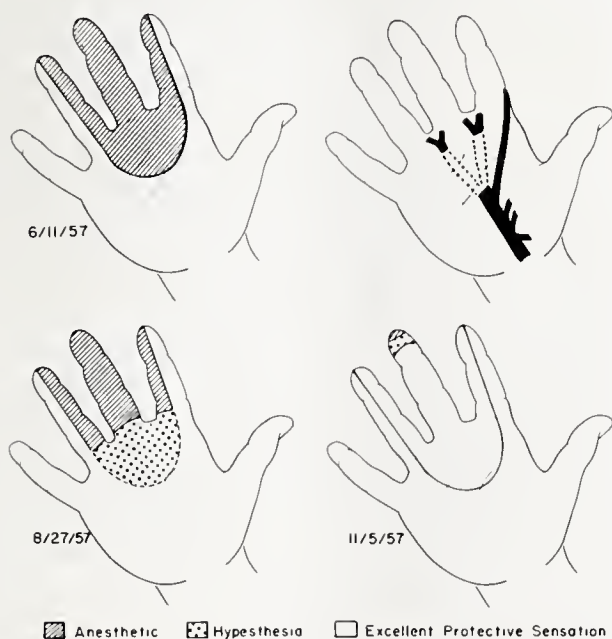


Figure No. 12

Under selected circumstances nerve grafts to the common digital nerves may be indicated. This 20-year-old white male had a double sural nerve graft to replace the two common digital branches of the median nerve that had been destroyed by a shotgun blast. The dotted area of the upper right hand figure indicates the area of the two 1½ inch grafts.

The excellent return of protective sensation included light touch, pin prick, hot and cold. Two point discrimination is poor.

the wrist, it may be wiser to omit repair of the sublimus tendons, since — if all structures are repaired one is more likely to develop a large mass of scar which completely binds the profundus and sublimus tendons into a mass with the median nerve. Under almost no circumstances should repair of the palmaris longus tendon be accomplished. This is particularly true when repair of the median nerve is carried out. If repair of both the median nerve and the palmaris longus tendon is done, a dense mass of scar will likely develop in the area hindering regeneration of the median nerve.

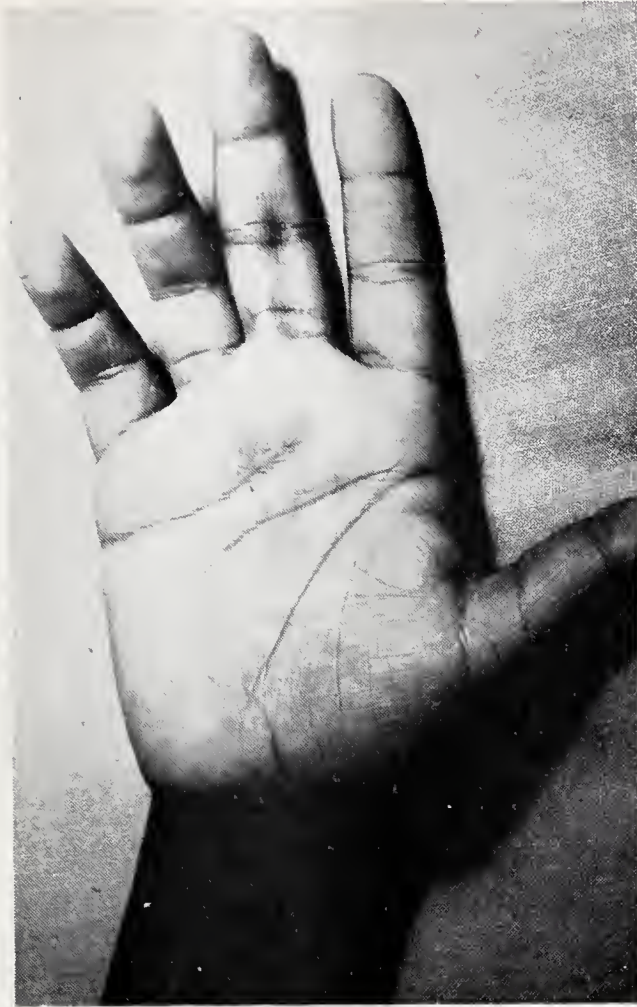
In the palm of the hand, proximal to the distal palmar crease, only the profundus tendon should be repaired. The sublimus tendon to that digit should be removed as far proximally and distally as is possible to do through the wound.

Tendons severed distal to the distal palmar crease lie within the osteofibrous canal of the finger, and therefore restoration of function can be extremely difficult. In general, primary repair should be undertaken only under the most ideal of circumstances, which would be a clean, early, incised wound. If the conditions are not ideal, delayed reconstruction of the tendon is preferable to attempting a primary repair. If primary repair of the flexor tendons with the osteofibrous canal is to be attempted, the sublimus tendon should be removed and not repaired; careful anastomosis of the profundus tendon should be carried out, as well as removal of one to two cms. of the flexor tendon sheath at the site of the anastomosis. When the laceration in the finger has been such that it lies along the course of the sublimus and profundus tendon, but the sublimus tendon function has been preserved and the only loss is a profundus tendon, profundus tendon repair is seldom indicated. Under these circumstances, in order to gain profundus function, it would mean sacrificing intact sublimus function, and the end result might well be less good than if one simply accepted the loss of profundus function and corrected the deformity of the distal phalanx, either by flexor tenodesis or arthrodesis of the distal interphalangeal joint.

When the flexor profundus tendon is severed beyond the inserting fibers of the sublimus tendon, primary repair is frequently indicated in a clean, early wound. This can be accomplished in two fashions; a primary anastomosis of the tendon distal to the inserting fibers of the sublimus may be carried out; or, if the distal portion of the tendon is very short, a simple tendon advancement or reinsertion of the profundus tendon will give an excellent result. It is important to be sure that the anastomosis of the tendon is well away from where the profundus tendon slides between the two slips of sublimus tendon.

When there has been extensive injury to the hand, and tendon repair of necessity has been delayed, the tendon graft has its place. The tendon graft should generally be placed from the mid-portion of the palm to the insertion of the profundus tendon. Both the profundus and sublimus tendons are removed from the osteofibrous canal to make a place for the graft. The entire osteofibrous canal or tendon sheath is then removed with the exception of a very small band being retained for a pulley over the distal portion of the proximal phalanx and the head of the metacarpal. Tendons of small caliber, such as the extensors of the toes and the palmaris longus tendon, are the tendons of choice for free grafting. The sublimus tendon, which might be removed, generally is too large a tendon. It has been shown that the success of the tendon graft depends upon early revascularization of the graft and this is best accomplished in a small tendon. We prefer at this time to use fine braided stainless steel wire sutures for our tendon repair, on both the flexor and extensor surface of the hand. The reaction of this material is minimal, and therefore scarring about the anastomosis is minimal. In some instances the Bunnell pull-out wire technique is satisfactory and applicable (Fig. No. 13).

If, in the course of treating hand injuries, we direct our primary attention to the careful initial management of the wound, and achieve primary wound healing, we have set the stage for successful

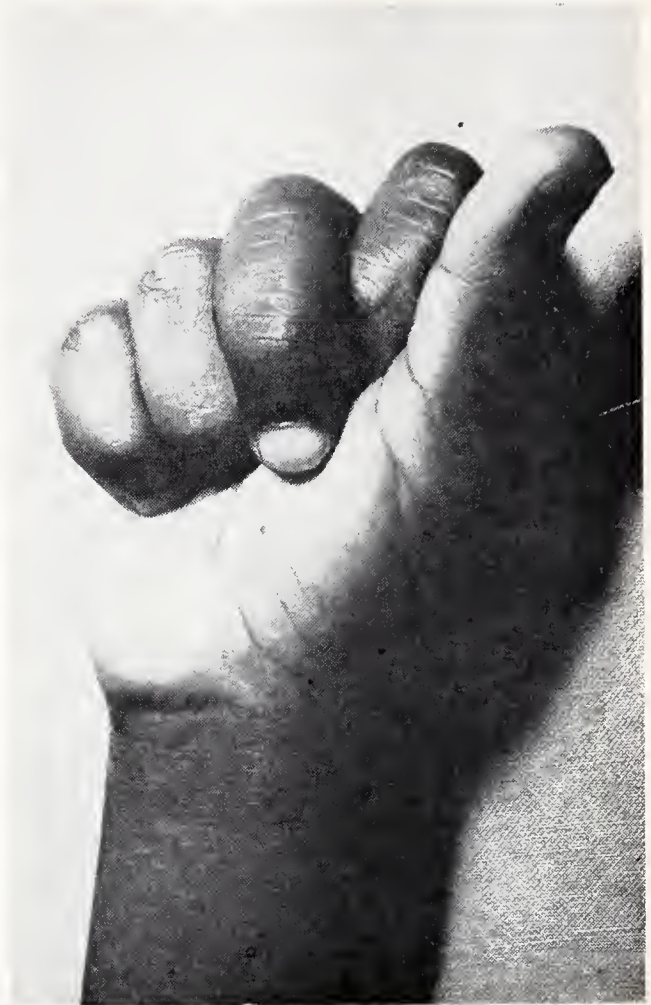


13-A

Figure No. 13

The free tendon graft is a valuable reconstructive procedure. This five-year-old child had complete loss of flexion of the long finger following a tenosynovitis, mid-palmar space abscess, and slough of the flexor tendons of the long finger. Four months after all drainage had stopped, the palmaris longus tendon was used as a free graft from the mid-palm to the base of the distal phalanx. A tenolysis of the graft was necessary later. The end result was an excellent range of motion. Such reconstructive work can and should be done in young children.

A) Extension one year after free tendon graft.



13-B

B) Almost complete flexion after one year—a ring helped replace the missing pulley and improved the range of flexion.

reconstructive procedures in the hand. Skin grafting, bone grafting, joint mobilization, nerve grafts, tendon repairs and tendon grafts may then be employed as reconstructive procedures to help restore useful function to the severely injured hand.

Blood and Fluid Replacement in the Acutely Injured Patient*

HARVEY R. BERNARD, M.D.**

The maintenance of physiologic fluid and electrolyte balance is a complicated and difficult problem in many instances. This need not be true in the case of the acutely injured patient. This phase of treatment is usually as simple and straightforward as the physician permits it to be.

During the treatment of such a patient, one must exercise caution in order that the whole of the patient not suffer while an interesting portion of his anatomy or physiology is manipulated. All too frequently, rigid adherence to rules laid down for the treatment of one disease will lead to trouble when the situation as a whole demands a change in those rules.

For example, the general rule which prescribes careful restriction of water and electrolytes during the treatment of patients suffering from acute kidney failure should be modified if the patient's illness is associated with loss of blood, plasma or extracellular fluid, either externally or by way of concealed sequestrations of fluid.

Since the majority of the remaining discussion will deal with the administration of, at times large quantities of electrolyte containing solutions, a short discussion of the problems involved with treatment of associated acute renal failure is in order.

This problem involves primarily the satisfactory resolution of two conditions: (1) the quantity of extracellular fluid available to such an individual should not be inadequate so as to cause or prolong the oliguria, (2) neither should there be an over-supply of water, colloid, and electrolytes which cannot be excreted and which constitute additional circulatory load.

From a practical standpoint acute renal

failure should not concern the physician (except when caused by direct trauma to the genitourinary tract) until the proper treatment of blood loss shock or other extracellular fluid deficit has begun. As oliguria is a rather frequent companion to severe oligemia or extracellular deficit, the simple restoration of volume may be curative. If, however, observation of hourly urine flow during the treatment indicates persistence of the oliguria despite restoration or near restoration of normal extracellular fluid volume, the physician must be very careful not to continue replacement therapy to the point of overloading. If, with replacement of extracellular fluid volume deficits urine volume rapidly increases to 40-50 ml. per hour, renal failure is unlikely. While hourly urine flows as low as 25 ml. per hour may be observed accompanying severe trauma, if urine flows of less than 20 ml. per hour are observed after restoration of extracellular fluid deficits, organic renal failure must be assumed. Simple deprivation of water, that is true dehydration, is rare as the cause of oliguria and is almost always associated with concentration of the urine as measured by specific gravity determinations. Deprivation of water alone will not cause urine flows of less than 20 ml. per hour and urine flows below this level effectively rule out the diagnosis of true dehydration, especially if the specific gravity is less than 1.015. The use of the water loading test under these circumstances is unnecessary and dangerous.

If the diagnosis of renal failure has been established and patency of the lower urinary tract is assured, restriction of water, colloid and electrolytes is now in order. If reasonable electrolyte balance is present, intake should be limited to 500-1000 ml. of 30 to 50 percent glucose solution per day, plus replacement of losses measured with regard to composition, concentration and volume. Daily

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accurate measurement of body weight will serve as an excellent check mechanism and under these circumstances a small daily loss of weight ($\frac{1}{4}$ to $\frac{1}{2}$ pound) should be maintained.

Usually for the purposes of discussion of fluid and electrolyte problems attention must be directed toward a great number of possibilities. As an attempt at simple classification, these possibilities are included under three general headings (1): (1) changes in extracellular fluid volume to include losses of blood, plasma or extracellular fluid directly or through sequestration of these fluids, (2) alteration in concentration of the extracellular fluid, and (3) alteration in the composition of the extracellular fluid with reference to the individual osmotically active particles.

The fluid and electrolyte alterations in patients suffering a recent injury have striking similarity for two reasons. (1) The solutions lost are almost always isotonic with extracellular fluid, and (2) the composition of these fluids is remarkably similar to that of the extracellular fluid. In other words, the acutely injured patient usually loses blood, plasma or extracellular fluid. For all practical purposes alterations in concentration and composition are of little concern in the early hours following injury. These facts are of great aid to the physician as they limit his requirements for replacement solutions to blood, plasma, extracellular fluid substitute or a combination of these. It also makes observation of the effects of treatment less difficult as this usually involves only the observation of the appearance and disappearance of signs of alteration in extracellular fluid volume.

Problems associated with the treatment of the injured patient are better understood by reconsidering the factors which influence the blood pressure and circulation. They are (1) the heart acting as a pump, (2) the volume of blood in the system, (3) the peripheral resistance, (4) the viscosity of the blood, and (5) the elasticity of the blood vessels. The latter two factors infrequently concern the physician under these circumstances.

The pump may fail from any one of many causes. However, heart failure is rare in the usual healthy patient who suffers acute trauma excepting those cases of direct trauma to the heart. Under these circumstances, contusion or laceration of the cardiac muscle may result causing myocardial weakness directly or cardiac tamponade indirectly through bleeding into the pericardium.

The peripheral resistance likewise stubbornly resists alteration in the healthy person. Excepting nervous system damage or immediate overwhelming infection, shock due to decreased peripheral resistance is seldom a factor in the seriously injured patient. Notation should be made that this latter factor of peripheral resistance is the only one which is likely affected by vasoconstrictors under circumstances imposed by acute trauma. The effects antagonized by vasoconstrictor drugs may be listed under the term, vasodilatation, which is rarely observed following acute trauma except as noted above. The lone remaining factor is that of the volume. This may occur as a result of direct or indirect loss of blood, plasma or extracellular fluid.

The direct loss of blood from an external bleeding vessel is an obvious cause of oligemia. The difficulty of determining the exact amount lost is well known to us all. A less obvious and still more difficult problem to assess is concealed loss of blood into the gastrointestinal tract, the abdomen or chest. The sequestration of blood in veins blocked by thrombi or similar losses of blood into traumatized tissue about comminuted or multiple fractures or bleeding into fascial or muscle planes are rather frequent causes of concealed blood loss and shock for which there is little external evidence.

Plasma and extracellular fluid losses may occur singly, together or in combination with losses of whole blood. Relatively more plasma and extracellular fluid are lost as the result of peritonitis, intestinal obstruction, superficial burns of the skin, and injuries of chemical origin.

In order to demonstrate how significant losses may occur with little that is

demonstrable by physical examination, the two following calculations have been drawn. These calculations are for demonstration only and are not intended to serve as guides for the treatment of any specific patient. The first calculation concerns a patient suffering from chemical peritonitis such as might follow gastric perforation or high jejunal laceration. If the peritonitis following this injury caused an increase in the thickness of the peritoneal lining of as little as two millimeters, the volume change involved would equal the area involved multiplied by the change in thickness or $22,000 \text{ cm.}^2 \times .2 \text{ cm.}$ or a volume change of 4,400 cc. sequestered in the peritoneum.

The second calculation concerns a patient suffering intestinal obstruction of a loop of small intestine which measures 1 meter in length and 8 centimeters in diameter on x-ray examination. The volume of this cylinder is multiplied by the radius squared multiplied by the length, or approximately $3 \times 4 \times 4 \times 100$, or 4,800 cubic centimeters. If the loop contained 50 per cent air, the extracellular fluid lost would approximate $2\frac{1}{2}$ liters.

The signs and symptoms of extracellular fluid deficit are listed in Figure I.

FIGURE I

MANIFESTATIONS OF EXTRACELLULAR FLUID VOLUME DEFICIENCY

Depression in both subjective and objective response. Diminution in gastrointestinal peristalsis. Signs of decreased blood volume and blood flow. Oliguria in association with hypotension. Diminution in skin volume and elasticity. Fall in basal body temperature. Concentration of the blood elements.

These symptoms and signs along with a history compatible with extracellular fluid loss constitute the basis for the diagnosis of extracellular fluid volume deficiency. The decision as to the presence or absence of these signs and symptoms and their severity is made best by the physician who has observed carefully the normal patient, noting particularly the

alterations which occur with the extremes of age. No attempt should be made to estimate the amount of fluid to be replaced. Based on the assessment made, the replacement solutions should consist of blood, plasma, extracellular fluid substitute or more commonly a combination of these. If plasma is used, the physician must be certain that it has received treatment to insure that it is free of hepatitis virus.

The next most important question concerns the amount of fluid to be given. Many attempts have been made to reduce this problem to a formula by measuring or estimating losses, determining per cent of body surface burned and estimating needs based on severity of physical findings. While these formulas may have some value to the inexperienced physician who is unaware of the rather large volume of fluid which is required at times, the chances of error based on any formulation are very great indeed. The only constant indicator is the patient himself.

The best course to follow involves the construction of the diagnosis based on the signs and symptoms of the patient, the administration of fluids of a type designed to treat these signs and symptoms, and continuation of this treatment with frequent reassessment of the patient until the original signs and symptoms begin to abate. At this point administration should be slowed and stopped as these signs and symptoms disappear.

All signs and symptoms must be considered. As an example of what may happen if the patient is not considered as a whole, reflect upon what occurs if one takes the frequently offered suggestion of "give sufficient fluid in order to maintain an hourly urine output of 30-40 ml." in a patient who has also suffered organic renal disease. Such a patient may go from the frying pan of oligemic shock into the fire of extracellular fluid volume excess. The signs and symptoms of this condition listed in Figure II are rarely seen excepting that a physician give too great a volume of fluid intravenously.

Every bit as great care must be exercised in making the decision to discon-

FIGURE II
THE MANIFESTATIONS OF
EXTRACELLULAR FLUID
VOLUME EXCESS

Difficult breathing. Increased blood volume and cardiac output. Decompensation of the cardio-respiratory system. Increase in tissue fluid volume (edema). Vomiting, diarrhea. Dilution of the blood elements.

tinue fluid replacement therapy as was used in starting it and in many instances the decision must be made to proceed with operative correction short of ideal replacement. Such instances are seen in patients losing blood as fast as it is replaced or in certain cases of intestinal obstruction with similar difficulties.

This type of therapy demands constant close physician attendance and the physician who states, "give him five liters of solution intravenously, I'll be back to operate in three hours" has many more chances of being wrong than of being right.

The solutions used are blood, blood plasma which has been allowed to stand six months at room temperature, and lactated Ringer's solution. If lactated Rin-

ger's is not available, a satisfactory substitute may be fashioned from .85 per cent sodium chloride and 1/6 molar sodium lactate, given in a 2:1 ratio. Mixing prior to administration is not necessary, especially if rather large quantities are to be used.

SUMMARY

The usual fluid and electrolyte need of the severely injured patient is for replacement of a deficit of extracellular fluid volume as a result of direct loss of blood or fluid or as the result of sequestration of body fluids.

Excepting cases of direct genitourinary trauma the question of acute renal failure should not influence therapy designed to replenish extracellular fluid deficits until such deficits near replacement.

Decisions to begin therapy with fluid in the acutely injured patient and the decision to slow and stop therapy should be based on close observation of the signs and symptoms exhibited by that patient and not on any formula or outline.

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Significance of Early Neonatal Jaundice*

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Research into the mechanisms of jaundice among newborn infants has been brisk and illuminating in recent years. New basic discoveries and an accumulation of clinical experience have established a number of new concepts, or have strongly supported old ones important to the management of jaundiced infants. These may be summarized as follows:

1) Normal newborn infants destroy red blood cells and consequently manufacture bilirubin at a rate comparable to that for older children and adults. The fall in hemoglobin in the early weeks of life results from a diminished production of new red cells, and not from an accelerated destruction of old ones.

2) The tendency for newborn infants to become jaundiced (so-called physiologic jaundice occurs in about one-third of all newborn infants) results from a transient incompetence of the liver to excrete bilirubin. The excretion of bilirubin is limited by an enzyme within the liver cells which is necessary for the conversion of indirect bilirubin to the direct-reacting form.

3) A necessary mechanism for excreting bilirubin involves the conjugation of indirect bilirubin, or just bilirubin as it is now commonly called, with glucuronic acid to form bilirubin glucuronide, or conjugated bilirubin. The latter conjugate gives an immediate color reaction in the van der Bergh test and hence previously was identified as direct bilirubin.

4) Bilirubin in sufficient concentration probably is toxic to nerve cells causing staining and destruction of cerebral ganglia, a condition known as kernicterus. Kernicterus is frequently fatal and results usually in manifestations of brain damage among survivors.

5) Any condition which elevates levels of indirect bilirubin in the serum of

newborn infants increases the risk of kernicterus. Such conditions may consist of increased production of bilirubin, as in hemolytic diseases; inhibition of the already inadequate glucuronidation mechanism, as may occur with anoxia; extreme degrees of immaturity of enzyme systems, as occurs with prematurity; and possibly competition by other agents for the glucuronidation mechanism.

6) Kernicterus can usually be prevented by keeping serum levels of bilirubin below 18 to 20 mgm per cent. The only means of proven effectiveness for removing excess amounts of bilirubin is exchange transfusion.

7) The limited ability of newborn infants to form glucuronides accounts for the unusual toxicity in this age group of some agents, such as chloramphenicol.

These points will be elaborated.

FORMATION OF BILIRUBIN

The normal life span of red cells is about 120 days. After this time erythrocytes fragment and the resultant particles are phagacytized by reticulo-endothelial tissue. The heme portion of the hemoglobin molecule is degraded to bilirubin which circulates in the body fluids attached to molecules of albumin. Levels of bilirubin in the serum of normal persons do not exceed 1 mgm per cent.

Thirty to fifty per cent of all newborn infants become visibly jaundiced between the second to sixth days of neonatal life. In the absence of any known disease process this phenomenon has been termed physiologic jaundice. That this designation is not entirely appropriate will become apparent later in the discussion. The severity of jaundice is quite variable. Levels of bilirubin in some babies exceed the safe maximum above which kernicterus occurs. Death or damage from kernicterus is now a well recognized consequence of severe degrees of so-called physiologic jaundice of the newborn. Gen-

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erally speaking small babies develop more intense jaundice, which reaches a peak a few days later than larger babies. This is shown in the studies of Crosse, Meyer and Gerrard (1).

Explanation for the hyperbilirubinemia of newborns might reside either with an accelerated destruction of red blood cells, and consequent over-production of bilirubin, or with an inability of the liver adequately to excrete bilirubin. Weech favored the later hypothesis and termed it hepatic immaturity of the newborn.

Infants at birth have high levels of hemoglobin which drop during the early weeks of life to lower levels which are maintained for many months. It has been attractive to speculate that the high levels of hemoglobin were necessary for transport of oxygen in a fetus living an intra-uterine life poorly supplied with oxygen, and that following birth of the baby into an atmosphere rich in oxygen the abundant transport system was no longer required. The relative plethora was therefore relieved by hemolysis producing a transient excess of bilirubin.

This explanation does not fit all the facts. In the first place the cord blood of newborn infants already shows a relative hyperbilirubinemia long before hemolysis has begun. In fact the hemoglobin does not fall substantially until after the first week of life, by which time the jaundice is waning or has disappeared altogether. Furthermore, transfusion of newborn infants with tagged erythrocytes has shown that the red blood cells are destroyed at a rate normal for older persons (2). The fall in hemoglobin in the first months of life must be presumed to be caused by a diminished production of new erythrocytes rather than an accelerated destruction of old ones. An expla-

nation for the hyperbilirubinemia of newborns must therefore be found in some process other than accelerated production of bilirubin.

EXCRETION OF BILIRUBIN

Bilirubin as it is produced in the reticulo-endothelial system gives a delayed color reaction in the van den Bergh test. As this bilirubin passes through liver cells it is modified and subsequently gives an immediate color reaction. This modification of bilirubin by the liver has only recently been clarified. The modification consists in the conjugation of bilirubin with glucuronic acid. The reactions leading up to and resulting in this conjugation are shown in Table I from the work of Brown and Zuelzer (3). Note that the substrate for the reaction is glucose, and not glucuronic acid directly. This becomes significant as we evaluate different plans of therapy. Note also that the third and final reaction, the transfer of glucuronic acid from the UDP moiety to bilirubin is facilitated by the enzyme, glucuronyl transferase. It is this enzyme which appears to be functionally immature in the first days of life, thus limiting the amount of bilirubin which can be detoxified and excreted. Evidence for a deficiency of glucuronyl transferase comes from a number of sources. Brown has shown that liver homogenates from fetal, neonatal and adult guinea pigs show a progressive increase in capacity to form conjugates of glucuronic acid (3). Homogenates from the fetal and newborn periods are capable of performing each step in the conjugation process except for the last one involving the action of glucuronyl transferase. Lathe and Walker have shown that the same condition prevails in the livers of newborn infants (4). Slices and homogenates of liver from

TABLE I

1) Uridine Triphosphate + α -Glucose -1- Phosphate	_____	UDP Glucose + Pyrophosphate
2) UDP Glucose + 2 DPN +	_____	UDP Glucuronic acid + 2 DPNH + 2 H*
	glucuronyl transferase	
3) UDP Glucuronic acid + Bilirubin	_____	Bilirubin - Glucuronide + UDP

ENZYMATIC STEPS IN GLUCURONIDE SYNTHESIS (After Brown and Zuelzer)

newborns did not readily conjugate bilirubin even in the presence of the immediate precursor, uridine diphosphoglucuronic acid.

By three weeks of age the capacity to form conjugates with glucuronic acid, and hence the capacity to excrete bilirubin appears to have reached normal adult levels. Most infants after the first week of life have "tooled up" their livers sufficiently to handle all but the most extraordinary loads on the conjugating system. A rare condition exists in some humans and in a mutant strain (Gunn) of Wistar rats characterized by a permanent deficiency of glucuronyl transferase. The humans and the involved rats are jaundiced due to a permanently elevated level of indirect bilirubin, and frequently have staining of cerebral ganglia with manifestations of brain damage. Another condition in humans, Gilbert's Disease, is characterized by a permanent but more moderate deficiency of glucuronyl transferase. Affected persons have elevated serum levels of indirect bilirubin, insufficient to cause neuronal damage. Gunn rats and humans affected as described above, have served as important experimental models for establishing the pathways of bilirubin metabolism and for determining the effects of various conditions on metabolism of bilirubin.

CHARACTERISTICS OF BILIRUBIN

Bilirubin as it is formed by reticulo-endothelial tissue is relatively insoluble in water but soluble in lipids. It is transported in the serum attached to molecules of albumin. It is associated with toxicity to neurones. It is not excreted in unaltered form either by the kidneys or by the liver. Bilirubin after it is conjugated with glucuronic acid by the liver is rendered insoluble in lipids and highly soluble in water. It too is attached to protein molecules. It is non-toxic to neurones. It is readily excreted in the bile and the urine.

The toxicity of bilirubin for the central nervous system has long been suspected but conclusive proof was lacking. Circumstantial evidence has been abundant. Babies do not develop symptoms of kernicterus until the first day or two after birth. They may then show lack of appetite, mild spasticity, opisthotonus, slow or shallow respirations and muscle twitching. At autopsy the involved areas of the brain show yellow staining of neurones and, in babies who survive the disease a few days, degeneration of nerve cells. The yellow pigment has been identified as bilirubin. Some authors have suggested that an unknown noxious process damages the nerve cells, which then become supra-vitally stained with bilirubin. No noxious process or agent other than bilirubin is invariably present in cases of kernicterus. Anoxia and anemia are not necessary and frequently are not present when symptoms of kernicterus appear. Rh antibodies are not toxic to nerve cells in culture; Rh antigens have not been demonstrated in nerve cells. In fact no incompatibility of Rh or other blood groups occurs in a great many cases of kernicterus. The only factor which is invariably present is hyperbilirubinemia.

There exists an excellent clinical correlation between the intensity of the hyperbilirubinemia and the occurrence of kernicterus. This is shown by the results of Hsia et al (5). The crucial serum level of bilirubin above which toxic effects are most likely to be seen is 20 mgm per cent. This holds true regardless of the cause of hyperbilirubinemia: hemolytic disease due to incompatibility of Rh and other blood factors, sepsis, spherocytosis, prematurity and hyperbilirubinemia of unknown cause may all be associated with kernicterus. Not all babies develop kernicterus even when bilirubin levels exceed 30 mgm per cent. This finding is substantiated by experience with the Gunn rats. There are important individual differences in susceptibility to kernicterus at comparable concentrations of bilirubin. These differences may relate to alterations in permeability of cell membranes or of the blood-brain barrier. Bilirubin to produce a toxic effect probably must enter neurones. Under these circumstances we may presume that bilirubin is indeed toxic based on the work of Day, showing a diminished uptake of

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oxygen when brain tissue was exposed to bilirubin. Entry of bilirubin into tissues just prior to the onset of kernicterus is suggested by the lowering of serum levels of bilirubin frequently observed at this time. This phenomenon may explain some of the cases of kernicterus reported to occur at serum levels less than 20 mgm per cent.

A number of factors are important in determining diffusibility of bilirubin across membranes. Some of these will be discussed.

CONDITIONS CONTRIBUTING TO KERNICTERUS

In 1956 Silverman and co-workers reported a different mortality rate among premature infants treated with two different regimes of prophylaxis with antibiotics (6). Infants receiving gantrisin experienced a substantially higher mortality than those receiving other antibiotics. The difference in mortality was accounted for by a higher incidence of kernicterus among infants receiving gantrisin. Surprisingly enough many babies died of kernicterus, having had serum levels of bilirubin less than those ordinarily regarded as toxic. Odell subsequently found that gantrisin, salicylates, and certain other substances enhance the transfer of bilirubin across semi-permeable membranes (7). He postulated that gantrisin occupies the same receptor sites as bilirubin on albumin molecules, and, by a process of crowding out, increases the amount of unattached or diffusible bilirubin. It is this bilirubin which is free to enter cells producing a toxic effect. Serum levels of bilirubin are then only an estimate of potential toxicity. The diffusible bilirubin, which cannot be measured easily, actually produces the damage and appears to be increased by gantrisin. This same effect is produced by other sulfa drugs, probably including Madribon administered to mothers prior to delivery.

The same mechanism may explain an observation reported by Abelson and Boggs (8). They found that serum concentration of heme pigments other than bilirubin showed a closer correlation with the onset of kernicterus than the concen-

trations of bilirubin itself. The evidence that bilirubin produces the neuronal damage of kernicterus seems too overwhelming to discard completely. Odell has shown that the presence of some heme pigments increases the transfer of bilirubin across membranes. He has postulated the same mechanism as for gantrisin. The heme pigments may occupy the same receptor sites as bilirubin on the protein molecules. When heme pigments are present in excess, bilirubin in a diffusible form is made available to enter neurones. Thus the relation between elevated levels of heme pigments other than bilirubin and kernicterus is an indirect one.

In 1955 Crosse, Meyer and Gerrard reported an increased evidence of kernicterus among infants receiving large doses of Vitamin K (1). Usual total doses of Vitamin K, administered to prevent hemorrhagic disease of the newborn, are under 5 mgm. Infants in the premature units of Birmingham experienced a burst of therapeutic exuberance in the years between 1950 and 1954. Some infants received as much as 120 mgm of Synkavit in the first days of life. These babies suffered a four-fold increase in the incidence of kernicterus. Subsequent work has shown that Vitamin K substantially increases serum levels of bilirubin. The mechanism by which this is accomplished is not clear. The suggestion has been made that Vitamin K inhibits the already inadequate glucuronyl transferase system. This explanation needs to be investigated further (9). In any event, the association between large doses of Vitamin K, hyperbilirubinemia and kernicterus is clearly established both in infants and Gunn rats. Newborn infants suffer the same ill effects from large doses of Vitamin K administered to the mother prior to delivery as they do from receiving it directly by injection (10).

Several authors have reported a higher incidence of kernicterus among infants with a history of anoxia than among control subjects. Our own work suggests that this effect may be mediated through high levels of bilirubin which are associated with anoxia (11). Premature infants with respiratory distress had



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sustains
retains*

*extra
antibiotic
activity*

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levels promptly

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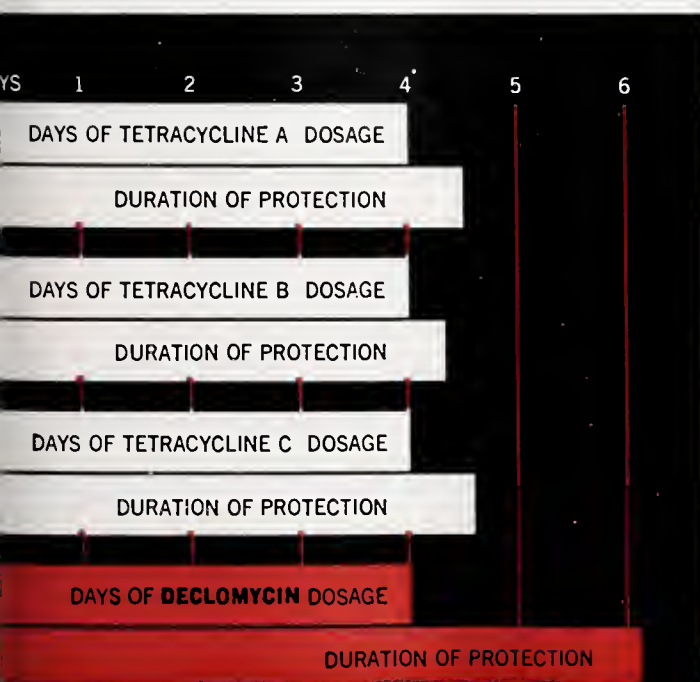
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SYRUP, 75 mg./5 cc. teaspoonful (cherry-flavored), bottles of 2 and 16 fl. oz. **Dosage:** 3 to 6 mg. per pound body weight per day—divided into 4 doses.

PRECAUTIONS—As with other antibiotics, DECLOMYCIN may occasionally give rise to glossitis, stomatitis, proctitis, nausea, diarrhea, vaginitis or dermatitis. A photodynamic reaction to sunlight has been observed in a few patients on DECLOMYCIN. Although reversible by discontinuing therapy, patients should avoid exposure to intense sunlight. If adverse reaction or idiosyncrasy occurs, discontinue medication.

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strikingly higher serum levels of bilirubin than similar infants with normal breathing patterns. This effect could not be accounted for on the basis of differences in birth weight. The suggestion has been made that hypoxia may depress the already inadequate activity of glucuronyl transferase, thus interfering with excretion of bilirubin. Although a sequential association involving anoxia, hyperbilirubinemia, and kernicterus is clearly established, the mode of association is not definitely known.

A number of agents other than bilirubin are detoxified and excreted as glucuronides presumably through the same metabolic pathways. Among these substances are many hormones, morphine, chloramphenicol and salicylic acid. As might be expected, the newborn infant excretes these substances slowly. This accounts for the unusual toxicity of chloramphenicol for newborn infants receiving doses well within the usual safe range for infants only a few weeks older. As might also be expected, an excess of these substances in the first days of life probably overloads the glucuronidation mechanism resulting in an accumulation of bilirubin. Preferential glucuronidation of some agents has been suggested by experiments conducted in vitro. If these observations are substantiated with newborn infants, a roster of substances ranked according to their priority for the glucuronidation mechanism would be of enormous interest.

Hemolytic diseases in the first days of life are notorious for their association with hyperbilirubinemia and kernicterus. Hemolysis of the infant's erythrocytes by action of a maternally derived antibody on a fetal red cell antigen produces a syndrome termed erythroblastosis fetalis. In our experience, about one-third of the cases of erythroblastosis are caused by incompatibility between mother and fetus in the Rh system of blood grouping. Nearly two-thirds of the cases are due to incompatibilities in the ABO system; less than 2 per cent are due to incompatibilities of rare or minor blood groups.

Cases of erythroblastosis fetalis of all types account for only about one-third of newborn infants who develop a dangerous

degree of hyperbilirubinemia. Other causes include sepsis or blood stream infection, spherocytosis, galactosemia, cytomegalic inclusion cell disease, toxoplasmosis, brain hemorrhage, and hepatitis. A jaundiced newborn infant deserves intensive and detailed diagnostic study to determine the cause of jaundice. In the majority of cases, even with extensive diagnostic study, we have not been able to fix on a cause and have presumed it to be an extreme deficiency of glucuronyl transferase. Exceptions consist of babies who become jaundiced or show rapidly rising levels of bilirubin in the first twenty-four hours after birth. These babies nearly always have erythroblastosis fetalis.

TREATMENT

Aside from certain special situations requiring special therapies, such as sepsis, the only means of proved effectiveness for diminishing hyperbilirubinemia and preventing its dire consequences is exchange transfusion.

Blood which cross-matches with the mother's serum is exchanged in 10 or 20 ml aliquots for 500 ml of the baby's blood. This procedure washes excess quantities of bilirubin out of the body fluids. Bilirubin levels are checked frequently following transfusion; the procedure is repeated as often as necessary to keep bilirubin levels beneath 20 mgm per cent. Anticipatory exchange transfusions are done in the first 24 hours after birth if the bilirubin in the cord blood exceeds 5 mgm per cent, or if it increases at the rate of 1 mgm per cent per hour and if there is confirmatory laboratory and clinical evidence of erythroblastosis fetalis. At this age the exchange transfusion removes sensitized erythrocytes which later will become hemolyzed. It should be emphasized that exchange transfusion is indicated when the bilirubin reaches 20 mgm per cent, regardless of the reason for elevated levels. Visual estimates of the severity of jaundice are not reliable; jaundiced babies should have assays of bilirubin as frequently as needed in order to show that levels have not reached the toxic range and are falling.

Various efforts have been made to reduce the levels of bilirubin or to diminish their adverse effect by procedures other than exchange transfusion. Administration of ACTH has been suggested but beneficial effects have not been proved. Bowen et al have shown that transfusions of albumin protect puppies from death caused by injections of indirect bilirubin (12). He postulates that the additional protein provides sufficient new receptor sites for bilirubin that its diffusion into cells is diminished. This work needs to be confirmed in experimental animals and is reported here only as an item of interest.

Danoff and co-workers have produced a lowering of bilirubin by administering glucuronic acid or its derivatives to jaundiced babies (13). According to accepted concepts of bilirubin metabolism glucuronic acid should have no effect. The substrate for forming bilirubin glucuronide is glucose, not glucuronic acid. Danoff and Holt have postulated an alternate pathway of metabolism. Critics of this work have pointed out that an alternate pathway may well exist, but it has not been demonstrated and need not necessarily involve glucuronic acid. Administration of glucuronic acid lowers the level of bilirubin in the serum, sometimes only briefly. Where the bilirubin goes is something of a mystery. It may be excreted, as Holt and Danoff believe, but this is not proven. It may leave the body fluids to enter the tissues; if this is so the risk of kernicterus might be greatly increased. These are matters of current controversy.

The facts remain that indirect bilirubin accumulated in the serum for any reason is probably a toxic agent; the only known means for removing it and preventing kernicterus is exchange transfusion.

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♦ *What's* NEW ♦

Pathology

WILLIAM ORR, M.D.

Much has been done to improve the diagnostic acumen of the physician through the past several years and many of these aids have been carried out in the field of pathology and clinical pathology. Many of these procedures have been augmented by the utilization of radio-active materials, which have added much to the laboratory facilities for diagnostic studies. In the primary field of anatomical pathology utilization of many different types of special stains have augmented this work tremendously and in most general hospitals now it is the usual procedure to utilize special stains as a help in arriving at a correct diagnosis. Also the use of stains for chemistry studies of histological sections have given much information concerning various disease processes. It is hoped in the future that a combination of chemical studies and special staining procedures may aid greatly in understanding the many classes of diseases that inflict the human body. The use of the "Pap" smear has become a routine diagnostic aid.

With regards to the clinical laboratory, the major areas in which the greatest amount of work has been done in recent years has been predominantly in the chemistry laboratory. However, other departments in the clinical laboratory have seen some improvements both in technique as well as in methods of examination.

In the hematology department the utilization of micro-hematocrits has greatly increased the efficiency of this department and in most general hospitals now this procedure has replaced utilization of the red blood cell count except in special instances.

In the field of blood-banking, utilization of plastic bottles has augmented the giving of platelet transfusions and in separating the various fractions of blood for fractionating uses. There are also improved techniques in the methods of typing and crossmatching. Much work is being done in the description and the understanding of many new factors within the blood and a great deal of work is now being done with immunohemato-logical studies. As far as anti-body activity is concerned, the utilization of the fluorescent light has aided much in understanding this particular phenomenon.

In the field of bacteriology, better techniques as well as the utilization of new media has assisted greatly in understanding the major problems of many hospitals at the present time; the staphylococcic coagulase positive infection. Most institutions have set up infection committees and are utilizing the bacteriological department as a screening area to examine staff personnel, both physician, nurse, and lay personnel, for carriers of the staph infection and are also studying through bacteriological methods, the sterilization techniques, housekeeping techniques, etc., as regards various areas of the hospital. With the utilization of the new media it is possible to identify the coagulase positive staphylococcus readily.

In the field of chemistry, a great deal of progress has been made. Micro-techniques which instituted several years ago have come to the front in many instances so that it is possible now with only a small amount of serum to make numerous chemical examinations in order to further study the body processes. Newer ultra-micro techniques are now being described and equipment being

made with which it is possible with the serum obtained in a capillary hematocrit tube to run approximately 10 to 12 procedures on that amount of serum. This requires special equipment, particularly centrifuges, pipettes, and special colorimeters in order to carry out these procedures. It certainly seems that this represents one of the fields of clinical chemistry in which a great deal of work will be done within the next few years and as techniques improve and as more examinations are possible, it is my opinion that the ultra-micro technique procedures may well replace many of our more standard procedures in the clinical laboratory. Many hospitals are now using the auto-analyzer which requires less technical personnel and has added many procedures to its manual. It is now possible with the auto-analyzer to do many of the major procedure now carried out in the clinical laboratory. In view of the marked shortage of well-trained medical technologists, certainly it appears that automation in the laboratory is a coming thing.

In other fields of close relation to the laboratory, particularly the advent of more open heart surgery, there must be a very close relationship between the surgeon, the radiological department, and the laboratory. In studying these patients, the utilization of oxygen studies from heart catheterization is now a major por-

tion of the diagnostic acumen of the surgeon. With open heart surgery there must be a close relationship between the blood bank to supply the necessary units of blood required for open-heart surgery. New methodology in hormone and enzyme chemistry has added much to the clinical laboratory. These procedures, however, are quite expensive and in most instances general hospital laboratories are not now equipped to do too many of the hormone or enzyme chemistry studies. It is hoped that with improved techniques, and perhaps with less expensive required equipment it may be possible for more general laboratories to go more into this field.

A close relationship between the radiologist and the pathologist in the utilization of isotopes has been brought about in the past few years. Utilization of these materials has aided much in diagnoses and in studying disease in patients. Principally the use of radioactive iodine in the study of the thyroid, the use of radioactive chromium in the study of RBC survival time, the use of radioactive fat in the study of pancreatic disease, use of radioactive substance for the study for the localization of brain tumors and also the use of radioactive substance for the study of plasma and blood volume. This is one of the major frontiers of medicine and as with all other medical fields the laboratory and the pathologist must keep abreast of the times.

A TEACHING SEMINAR
FROM THE
UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE

Abortion and Sterilization from Psychiatric And Medico-Legal Viewpoints

FRED O. HENKER III, M.D.*

For a physiologic phenomenon pregnancy can be one of the most stressful events ever to befall a person of our culture and thus, when imposed upon a personality having insufficient strength to adjust to it, may constitute the precipitating stress which activates a mental illness. Among the 188 women thus far treated in the University of Arkansas psychiatric unit ten had mental illness directly related to pregnancy or the puerperium. There is no specific psychiatric entity attributable to these conditions; rather any functional personality disorder, and certain organic brain syndromes, can be set in motion by the stress of pregnancy, delivery or motherhood. The type of disorder is determined largely by the basic personality of the patient — which introduces another connection between pregnancy and mental illness: the matter of heredity. This is portrayed in the studies of Kallman, who has shown an increasing tendency for relatives to develop psychoses proportional to the closeness of blood relationship to existing cases up to a peak incidence of 85.8% in identical twins of schizophrenic patients and 90% in identical twins of manic depressive patients (1).

Typical problems in this area are: severe depression in a woman upon becoming pregnant accompanied by suicidal thoughts, onset of pregnancy in a woman with a past history of one or more acute schizophrenic episodes precipitated by pregnancy, threat of pregnancy in a woman with past history of

repeated toxic complications of pregnancy including severe deliriod features, and a grossly inadequate, borderline psychotic couple incapable of social or occupational adjustment questionably capable of child rearing, nor pregnant yet. Each presents the possibility of one or more new cases of mental illness from the standpoint of stress, heredity or both, so it is not surprising that drastic measures for interruption or prevention of pregnancy are occasionally considered in the course of psychiatric care, and yet neither the physician nor the patient has complete freedom in this respect. Legally a person's right to determine what shall be done with his body is not unlimited—society having an interest in the individual's bodily integrity; violations of which are covered by criminal law as mayhem. And society has an interest in the life of an incipient human being. Violations in this area are covered by criminal law relative to abortion (2).

Historically, abortion dates back at least 5,000 years when early Chinese writings described mercury as an abortion producing agent. In 1,500 B.C. the Ebers Papyrus gave directions for producing abortions (3).

In ancient Greece there was a divergence of opinion regarding the procedure. Aristotle favored it on the basis of the belief that the fetus was part of the woman's body and that she had the same right to have it removed as she might any other undesirable portion. Plato suggested that any woman who conceived after her 40th year should submit to the procedure obligatorily. There were also certain early writers who espoused the

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Malthusian doctrine believed that it might be excusable or even commendable in a community faced with an increase in population without a proportional means of subsistence (3).

On the prohibitory side we have Hippocrates who, as revealed in the famous oath, was against abortion. This has been felt to have been influenced by religious tendencies to favor an increasing population.

In Medieval England inroads of epidemics such as "the black death" and wars such as "The 100 Years War" made an increased birth rate necessary. This is said to have furnished the background for the prohibition of abortion which we have until the present. At that time the ecclesiastical code was separate from that of the common law but it was from the common law that prohibition of abortion developed (3).

In the courts of the United States abortion has by statute been made a crime in all jurisdictions, but the law varies from state to state. The gist of the crime is in the intent to produce miscarriage coupled with the use of artificial means to bring about the result. In some states the crime is not considered committed unless the woman involved was pregnant at the time, while in others it need only appear that the defendant believed or suspected that the woman was pregnant. Consent of the woman is no defense. Usually the burden rests upon the prosecution to prove that the operation was unnecessary. If the patient as a result of the abortion dies and the necessity of the operation as a lifesaving measure cannot be established, the crime is murder (2).

Concerning the lawful justification for abortion in most states, Arkansas included, it is not lawful except to preserve the life of the woman which is construed to mean from the anticipation of death from natural causes unless the development of the fetus is destroyed. Here threat by the mother to harm herself or the unborn child because of psychiatric conditions probably does not present the necessity for operation (2). Abortion for rape or incest is illegal.

In some states: Colorado, Maryland, New Mexico, and District of Columbia, abortion is legal if it is necessary to safeguard the life of the mother or to preserve the health or safety of the mother. Here psychiatric indications are more apt to be admissible. A list of psychiatric indications for abortion from University of Virginia includes epilepsy with mental deficiency, severe psychoneurosis, previous postpartum psychosis, schizophrenia, neurological disease and mental deficiency.

Arkansas statutes pertaining to the subject are as follows:

Ark. Stats. (1947) & 41-301. Abortion defined—Penalty.—It shall be unlawful for any one to administer or prescribe any medicine or drugs to any woman with child, with intent to produce an abortion, or premature delivery of any fetus before the period of quickening, or to produce or attempt to produce such abortion by any other means; and any person offending against the provision of this section, shall be fined in any sum not exceeding one thousand (\$1,000) dollars, and imprisoned in the penitentiary not less than one (1) nor more than five (5) years; provided, that this section shall not apply to any abortion produced by any regular practicing physician, for the purpose of *saving the mother's life*.

Ark. Stats. (1947) & 41-2223. Unborn quick child—Killing of.—The willful killing of an unborn, quick child, by any injury to the mother of such child, which would be murder if it resulted in the death of such mother, shall be adjudged manslaughter.

Ark. Stats. (1947) & 41-2224. Administering drug or employing instrument to destroy child.—Every person who shall administer to any woman pregnant with a quick child, any medicine, drug or substance whatever, or shall employ any instrument or other means with intent thereby to destroy such child, and thereby shall cause its death, unless the same shall be necessary to *preserve the life* of the mother, or shall have been advised by a regular physician to be necessary for such purpose, shall be deemed guilty of manslaughter.

The Arkansas law as it applies to psychiatrically indicated abortion hinges on the interpretation of "saving" or "preserving the mother's life". This exact point of law has never been determined by the Supreme Court and waits upon a test case or enactment of a specific law by the legislature; however, instances are known where abortion has been performed for psychiatric reasons without prosecution. The decision regarding the bringing of charges would be largely up to the prosecuting attorney in whose jurisdiction the operation is performed, and to him the question is as indefinite as it is to the physician.

When a therapeutic abortion is to be performed, a physician should obtain the usual surgery consent from the patient and her husband, next of kin, or guardian, and then he should have written consultation reports from two other reputable physicians indicating the procedure is necessary to preserve the life of the mother. In a case of this kind the usual meticulous care must be used to avoid complications, as much prosecution for abortions arises out of complications, especially those resulting in death of the mother.

In British and Canadian courts abortion is handled very much as it is in the United States, providing for life imprisonment for anyone who administers drug or instrument to produce miscarriage. The rather stiff penalty is somewhat balanced by the following court case—one of the most dramatic pertaining to this subject in our time: *Rex V. Bourne*. A 14 year old feeble-minded girl was shockingly raped by a number of soldiers and became pregnant. Her medical advisors decided that for the sake of her physical and mental health the pregnancy should be terminated and they appealed to a Dr. Alec Bourne, a distinguished English gynecologist, to perform the operation. The governing English statutes on abortion made no exception for therapeutic abortion at the time. Dr. Bourne not only consented but announced publicly that he would make a test case of the matter. He was brought to trial at his own insistence. Mr. Justice

MacNaghten, the trial judge, in his direction to the jury, read into the abortion statute an exception for preserving the life of the mother. He said: "If a doctor is of the opinion, on reasonable grounds and with adequate knowledge, that the probable consequence of the continuance of the pregnancy will be to make the woman a physical or mental wreck, the jury is entitled to take the view that the doctor who, under these circumstances and in the honest belief, operates, is operating for the purpose of preserving the life of the mother." Dr. Bourne was acquitted (5).

Other countries are considerably more liberal with regard to abortion. In Russia a law was passed in 1920 so that abortion could be performed in any hospital without charge with the one stipulation that it be surgically induced and the pregnancy be of less than 2½ months duration. It was estimated that between 1920 and 1932 300,000 women's lives were saved by therapeutic abortion. In 1936 the abortion act was repealed and abortion was allowed for only 16 medical indications which included no psychiatric conditions. In the following 19 years the criminal abortion rate is said to have increased to such an extent that the Government repealed the prohibition of abortion by saying they wished to give the woman the possibility of deciding for herself the question of motherhood (6). Today in the Soviet Union as well as the eastern European countries abortion is performed virtually on demand during the first trimester of pregnancy. In Hungary during 1957-58 there were 269,000 abortions, in Bulgaria during the same period there were 68,000 and in Czechoslovakia during 1958-59 140,000 abortions were performed. (Lest the foregoing figures give rise to superiority feelings in some Americans the estimated annual illegal abortion rate in the United States is 1,000,000) (7).

In Norway a law passed in 1920 allowed abortion for strict medical reasons only; however, in medical practice there was a widening of indications without legal sanction. In consequence of this a new law was passed allowing abortion on

ethical, sociological and medical indications intended to cover rape, alcoholism, housing difficulties, and other conditions which might render the birth of a child disastrous. Psychiatric indications were vague (8).

In 1938 the Swedish Abortion Act was passed, and modified in 1946, allowing pregnancy to be terminated to the 20th week and in some cases to the 24th week on the following indications: 1. Medical indications. 2. Medico-social indications where, on account of weakness in the woman the advent of the child would entail serious danger to her life and health—particularly worn out mothers. 3. Socio-medical indications where, in view of the woman's condition of life and her circumstances it may be presumed that her physical and mental forces would be seriously impaired by the advent of the child and its subsequent care. 4. Humanitarian indications where the woman becomes pregnant through coitus which has implied a criminal act and certain other sexual offenses. 5. Eugenic indications where it may be presumed that the woman or the father will transmit to the offspring through hereditary channels; insanity, mental deficiency, or serious physical disease. These cases, however, must submit to sterilization (6).

Possibly as a consequence of this Act, in the year 1939 there were 439 legal abortions in Sweden, and by 1952 there were 5,322 (9).

In Denmark before 1939 pregnancy could be terminated only in face of danger to the life or health of the woman. In this year indications were extended to include prevention and it was granted that critical danger to the life or health of a woman might be due to disease or certain severe social conditions. Therapeutic abortion, until the end of the 16th week, was allowed after sexual crimes, and in cases of severe hereditary taint. It was required that the operation be performed in a public hospital; that two physicians agree on the indications and the case had to be reported to the Public Health Service. Legal abortions have increased from about 500 yearly before 1939 to about 5,000 yearly. Where reasons

other than the present illness are claimed, the decision must be made by a board of two physicians and one psychiatrist. The case material is prepared by a maternity welfare worker and presented to the board of three medical authorities (9).

The Japanese enacted new legislation in 1948 with the following indications for abortion: 1. In case the person in question or the spouse had mental disease or mental weakness. 2. In case the continuance of pregnancy or delivery seemed to be markedly injurious to the health of the mother owing to physical or financial conditions. 3. If the female conceived by violence or threats or by adultery where she was unable to resist or refuse.

During 1949 there were 246,104 legal abortions in Japan. The birth rate that year fell from 33.1 to 23.6 and the death rate fell from 11.6 to 9.1 (10).

Thus it appears that there may be a trend toward more lenient handling of medically and psychiatrically indicated abortion. Peculiarly there is also a trend toward a less drastic evaluation of pregnancy as a factor in mental illness.

Stokes has reported good results in carrying beyond term obsessive women, who it was feared would harm their children when they were born, by good cooperation between psychiatrist and obstetrician. In fact, he stated that in these cases termination may be disastrous to future mental health (11).

A review of 27 cases of women who threatened suicide because of pregnancy by Lindberg revealed that though abortion was refused, not one carried out her threat (6).

Ekblad reported on a series of 427 women on whom abortion was performed of which 156 became pregnant again within 22 months. They all gave birth without serious impairment of their mental health (12).

Arkle reported on 22 cases referred for abortion which was refused. One year after delivery only one case showed mental deterioration and this was considered due to the natural history of the illness and unrelated to the pregnancy (13).

It is evident that each case must be considered individually since psychological factors involved in precipitation of previous postpartum psychosis in the same patient or in another patient under similar circumstances may not be operating in an existing situation. However, in general, it seems that women who have been subject to previous serious episodes precipitated by pregnancy should be discouraged from further pregnancies by adequate birth control measures—probably sterilization of either husband or wife.

In a sense sterilization has been practiced for thousands of years. The Bible refers to eunuchs assisting in the murder of Jezebel about 884 B.C. and of the chief of the eunuchs at the court of Nebuchadnezzar around 606 B.C. Castration was primarily an incident in the slave trade but it was also used as punishment, interestingly by the Norman Kings as a humane measure in lieu of the death penalty. It was used by the Emperor Nero in order to practice sexual perversion; and it has been performed in order that its victims should retain a soprano voice or that they should be better able to ride on horseback. Yet there is an enormous difference between these practices and the modern sterilizing operations which leave the patient with all sexual capacity intact except the capability of begetting children.

As satisfactory as these modern sterilization operations may seem there are occasionally psychological repercussions. Removal of the ability to have children can constitute a serious wound to the personality or reawaken forgotten conflicts, therefore this aspect must be considered in sterilizations for any reason (14).

Sterilization is performed very frequently in this country without significant legal involvement. Indications fall under three headings: Therapeutic, Eugenic and Contraceptive. The latter can be performed in all states but four: Connecticut, Kansas, Montana, and Utah in which there are laws making it criminal to sterilize a person except for therapeutic or eugenic purposes. Therapeutic sterilization with consent of parties in-

involved is legal anywhere. Statutes in most states, including Arkansas, do not even mention therapeutic sterilization (2). Here is the site of action for the most effective way of preventing psychic trauma to parents or children by pregnancy. In evaluating the case the positive factors of discontinuing the possibility of pregnancy must be weighed against the possible negative factors of psychic trauma from loss of ability to conceive or guilt over having the procedure performed. When these have been discussed with the patient a statement clearly granting permission is signed by both parties involved and preferably a witness. Then there is little danger of legal complications. Sterilization of an incompetent person should first be cleared with the guardian of the patient and then approved by the Probate Court having jurisdiction over the case. Possibility of prosecution for mayhem is very remote.

Legal action pertaining to sterilization is far more likely to come from civil suits regarding ineffective or improperly performed operations or complications.

A Minnesota case, *Christensen V. Thornberg*, involved a woman with a severe contracted pelvis advised by her doctor after her first child that future pregnancy might be fatal. He recommended sterilization and it was decided that a vasectomy be performed on the husband. The wife became pregnant again. Later the husband sued the doctor who performed the vasectomy for \$5,000 for mental anguish suffered during the wife's second pregnancy, charging deceit in representing that an operation on himself would prevent conception by the wife. Held, an operation to sterilize a man whose wife may not have another child without grave hazard to her life is not against public policy or illegal and the charge of deceit could not be sustained unless it were shown that the physician made his representation with fraudulent intent. Judgment for the defendant was affirmed (15).

Eugenic sterilization was first authorized by statute in the United States in Indiana in 1907. It is now legal in 29 states: Alabama, Arizona, California,

Connecticut, Delaware, Georgia, Idaho, Indiana, Kansas, Maine, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Hampshire, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin. These provide for sterilization of specified classes of defective persons always including feeble-minded, imbeciles and usually insane, frequently others, such as epileptics, sex perverts, rapists and habitual criminals. The actual sterilization is supposed to be carried out by methods resembling those used for commitment, but the great bulk of eugenical sterilizations are performed on a voluntary basis by the patient to avoid the compulsory route. Guttmacher and Wichofen report 45,127 sterilizations in this country through 1945. Of these, 16,000 were done in California. A later report gives the total of 57,218 sterilizations through 1954, 34,282 women, 22,936 men, for mental illness 44%, mental deficiency 51%, Epilepsy, habitual criminals, moral degenerates, and sex perverts, 5% (2).

Statistics favoring eugenical sterilization sound convincing, but there are other writers who tend to minimize their importance. According to Thompson in 1935 the alarmist propaganda that mental deficiency and mental disorders were greatly on the increase was false. He believed sterilization of known mental defectives would have but little effect on reducing mental deficiency because only 5% of mental defectives have a mentally defective parent. In the last decade annual numbers of eugenical sterilizations have decreased from a yearly average of 3,000 in the 30's to 1,100 in recent years. This is partly due to a growing uncertainty as to the respective influence of

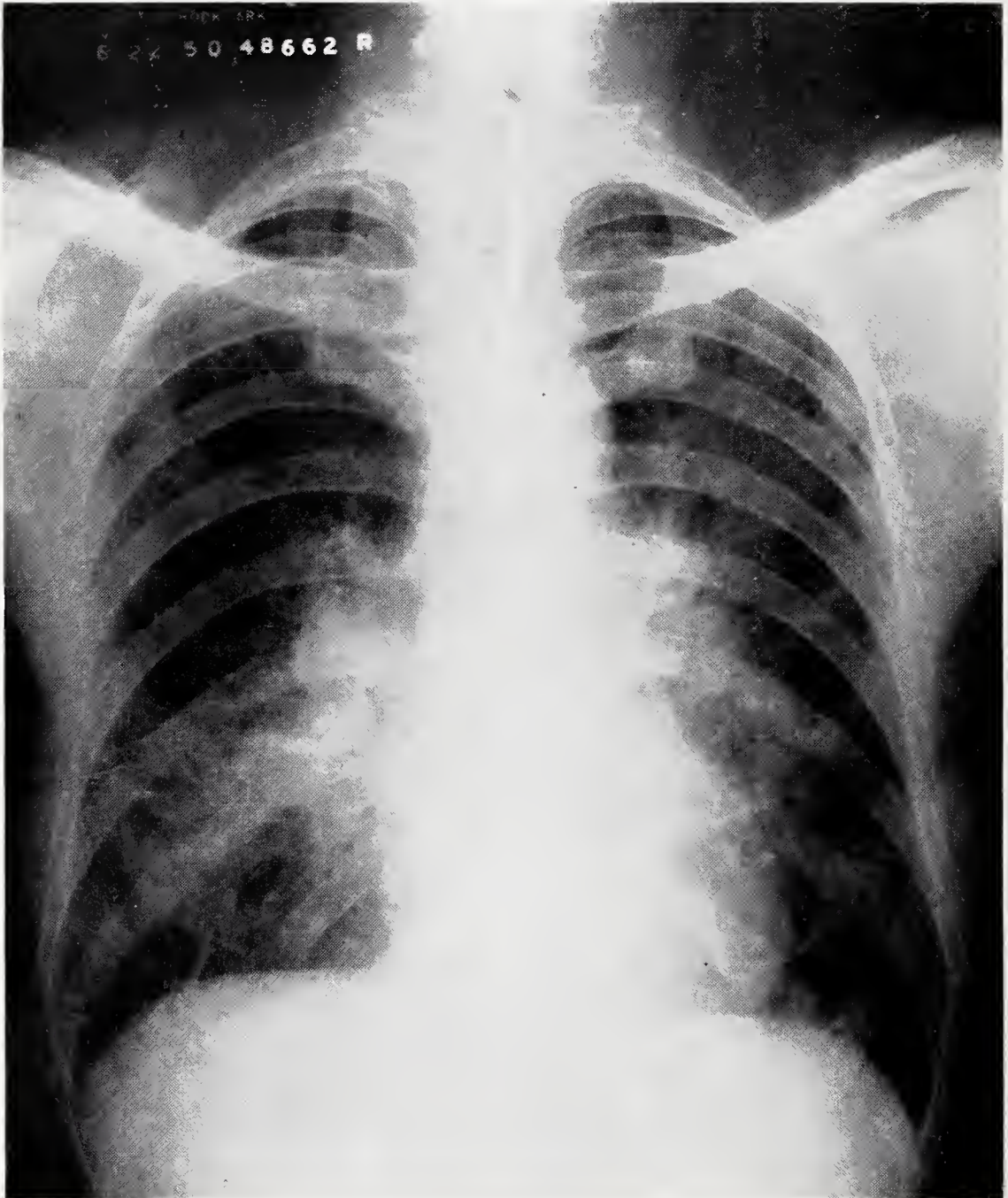
heredity and environment in the genesis of certain types of mental illness (16).

In summary—pregnancy contributes to the incidence of mental illness as a precipitating stress and by carrying hereditarily predisposing factors. These can be avoided in prone individuals by abortion and/or sterilization. Laws concerning abortion for psychiatric reasons show a slight trend toward leniency as do also psychiatric indications for abortion and sterilization. Legality of abortion hinges on the interpretation of "saving the mother's life". There are few legal restrictions on therapeutic sterilization with proper consent, and eugenical sterilization is provided for on a voluntary or compulsive basis in certain states, not including Arkansas.

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What Is Your Diagnosis?



FOR ANSWER SEE PAGE 379

Arkansas Public Health at a Glance

One of the most pressing problems facing both private medicine and public health today is the job of keeping abreast of the ever changing needs and problems connected with the health of the population. Health is an extremely dynamic field. As a solution is found to one problem, several others quickly arise to take its place. There are also those health problems that seem to be always with us.

It might well be argued that mortality statistics are not good criteria to determine health problems. However, it would be difficult to assign priorities and plan programs for improving health without taking these data into account. Mortality statistics also bear out the contention that

PROPOSED AMENDMENT TO THE CONSTITUTION OF THE ARKANSAS MEDICAL SOCIETY

"BE IT RESOLVED that Article IV, Section 2 of the Constitution of the Arkansas Medical Society be amended so as to read as follows:

Section 2. Active Membership

The active membership of this Society shall comprise all the active members of its component societies. Only such person is eligible for active membership in a component society as (1) possesses the Degree of Doctor of Medicine, issued by a medical school, which at the time such degree was conferred, was approved by the Council on Medical Education and Hospitals of the American Medical Association, and (2) holds also an unrevoked license to practice medicine and surgery issued by the Board of Medical Examiners which consists of members recommended by this Society. The eligibility requirements set forth in the preceding sentences are not to apply, however, to members in good standing in any component society at the time of the adoption of this section, nor shall they apply to a physician practicing in a county which had no active medical society at the time of the adoption of this section who became a member of the county society upon its formation and who has been continuously a member of said county society and who is now an active member in good standing thereof."

while many of our problems change over the years, many others seem to remain relatively the same.

The accompanying chart shows the position in the rank order of mortality of several leading causes of death for thirty years ago, fifteen years ago, and today. Considerable improvement can be seen in the position of such diseases as tuberculosis as a leading cause of death. Thirty years ago it was the third leading cause. Today it ranks eleventh. Prematurity has dropped from fifth to tenth in the same period. Other causes have been startling in their change in the other direction. Diabetes was the twenty-eighth cause thirty years ago, it was the tenth cause fifteen years ago, and today ranks sixth. Cancer was eighth in our first list and is now second.

It is interesting to note the figures for suicide and homicide. Suicide has risen from the twenty-ninth cause thirty years ago to fourteenth today. Thirty years ago the Arkansas people killed each other about three times more often than they killed themselves. However, today suicides actually outnumber homicides.

SELECTED CAUSES OF DEATH COMPARED BY RANK ORDER OF FREQUENCY IN ARKANSAS FOR THIRTY YEARS AGO, FIFTEEN YEARS AGO, AND TODAY*

Cause of death	rank order of frequency as cause		
	30 years ago	15 years ago	today
Heart Disease	2	1	1
Cancer	8	5	2
Vascular lesion affecting central nervous system	9	2	3
Accidents	6	6	4
Influenza and pneumonia	1	3	5
Diabetes	28	10	7
Tuberculosis	3	7	11
Nephritis	4	4	6
Suicide	28	16	14
Homicide	19	12	15

*Based on mortality statistics for 1929, 1944, and 1959.

Recent Findings in Regional Ileitis

ALFRED KAHN, JR., M.D.

Regional ileitis was originally described by Crohn years ago. Much interesting heretofore unknown information is still cropping up about this disease. For example, it has been shown that ileitis is a complete misnomer. This granulomatous process may affect any region in the gastro-intestinal canal; the disease may affect the esophagus, stomach, small intestine, and colon. What a different concept this is from that connoted by its old name of terminal ileitis. Actually, the preponderant lesion is in the small bowel.

In the American Journal of Medicine, September, 1960 issue, two of the newer aspects of regional ileitis are discussed.

Steinfeld, Davidson, Gordon and Greene have reported on the mechanism of hypoproteinemia. The fact that patients with regional ileitis and ulcerative colitis had low blood proteins had been known for years but the mechanism bringing this about was unknown. These authors studied patients with regional ileitis and ulcerative colitis using radioactive iodine tagged protein. Their studies definitely showed a decreased level of blood proteins and a decreased body albumen pool. The tests showed no suggestion of decreased formation of albumen by the liver. There was no failure of intestinal absorption. The studies instead showed an overrapid removal of albumen from the circulating plasma. This albumen loss was then traced to the stool; in other words, in the presence of regional ileitis or ulcerative colitis, there is a marked loss of albumen through the injured bowel into the lumen of the gut; this is then removed as stool. This mechanism of loss of albumen into

the stool has been also reported by Gross, Embree, Bally, Shipp, and Thorn; these authors studied a patient who did not have regional ileitis or ulcerative colitis but he did lose large quantities of albumen into the bowel lumen; this patient also had decreased hepatic manufacture of protein and increased capillary permeability to protein, features not reported in the cases of regional ileitis or ulcerative colitis.

Recently published by Werther, Schapira, Rubinstein and Janowitz (American Journal of Medicine, Sept. 1960) is a report of 5 cases of Amyloidosis in regional ileitis; only 5 such cases have been previously reported in the medical literature. In this series of 5 cases the nephrotic syndrome with progressive uremia was present in 3 cases. Hepatosplenomegaly was present in 3 cases. Gingival biopsy and Congo Red retention seemed to be of equivocal diagnostic value; in this regard, rectal biopsy has been proposed as a fairly good means of detecting amyloidosis (American Journal of Medical Sciences, Sept. 1960) in suspected cases.

A continuing investigation of well known diseases often brings out new facets that have previously been ignored or given scant attention. In the case of regional ileitis, one is dealing with a disease process that is far more common than previously suspected. Physicians and surgeons should consider it in the differential diagnosis of obscure abdominal pain. Intelligent handling of these cases demands a knowledge of the possible complications and sequelae.

MEDICINE IN THE NEWS

Of about 2½ million diabetic Americans, at least half are unaware of their condition, according to the American Diabetes Association. The incidence of the disease is increasing, the association reports, adding special urgency to a diabetes detection drive which began November 13, 1960 and continued for one week in Pulaski County. Dr. Louis E. Tolbert, Jr., who headed the Society's Diabetes Detection Drive, said the Society probably would make it an annual program.

An unrestricted \$5,000 grant check for medical research was presented to Dr. Theodore C. Panos, professor of pediatrics at the University of Arkansas Medical School by Wyeth Laboratories in November. The Wyeth award, one of 20 made annually by the Philadelphia pharmaceutical manufacturer to medical schools and colleges, may be applied to any medical research project.

Something has been done by the University of Arkansas School of Medicine to off-set the disturbing trend of a lack of interest of young men and women in the medical profession. On December 1st a "Medical Careers Night" was held at the University Medical Center Auditorium, sponsored by the Pulaski County Medical Society and the Pulaski County Medical Auxiliary. Pulaski County high school and college students and their parents were invited guests. Seven branches of medicine were discussed by a panel of experts. Other features included films, a question and answer period and a tour of exhibits.

The new president-elect of the Ouachita County Medical Society is Dr. R. C. Lewis, a colored physician. He has had a busy, successful practice in Camden, Arkansas for many years. Research by the Journal indicates that Dr. Lewis is the first colored physician to be chosen president-elect of a county Medical Society in this state.

The Month in Washington

Washington, D. C. — Physicians are being urged to cooperate fully to get their states to participate as soon as possible in the new federal-state program for medical care of needy and the near-needy older persons.

The medical profession also has been alerted to the dangers of relaxing its opposition to tying in medical care of the aged with Social Security. It is probable that the Kennedy Administration will try in 1961 to get Congressional approval of such legislation.

E. Vincent Askey, M.D., President of the American Medical Association, pointed out to the recent Washington meeting of the AMA House of Delegates that proponents of the Social Security approach had a pledge of support from the successful Democratic candidate for President.

"While our profession clearly may face a hard struggle in the 87th Congress on the issue of medical aid for the aged under Social Security, there is no ground for defeatism!" Dr. Askey said.

A few days later, Sen. Harry F. Byrd (D., Va.), Chairman of the Senate Finance Committee which handles Social Security legislation, reiterated his opposition to a compulsory medical care plan under Social Security. He said:

"I am opposed to the (Democratic party) platform recommendation for compulsory medical service and hospitalization under the Social Security system. I am convinced this would lead to socialized medicine with the possibility that it would bankrupt the Social Security trust fund. This matter came before the Finance Committee and was fought out in the post-convention session of Congress last August. The Senate voted 51 to 44 in opposition to the Democratic platform proposal, and instead adopted a fair plan for medical service and hospitalization for those in need of it."

Dr. Askey urged that all county and state medical associations provide "the medical leadership necessary to implement the Mills-Kerr bill (the new federal-state program) as rapidly as possible."

And the House of Delegates adopted such a resolution.

President-elect John F. Kennedy's first Cabinet appointment was Gov. Abraham Ribicoff of Connecticut as Secretary of Health, Education and Welfare—the official with primary responsibility for carrying out the federal part of the Mills-Kerr program.

Ribicoff, 50, was an early supporter of Kennedy for the Presidential nomination. He was twice elected governor of Connecticut. Before that, he served as a Hartford, Conn., police judge, a member of the state legislature and a member of the national House of Representatives. As governor, he inaugurated a comprehensive traffic safety program with strong penalties.

* * *

The Sabin oral polio vaccine will not be available in sufficient quantity in 1961 for large scale use.

Leroy E. Burney, M. D., Surgeon General of the U. S. Public Health Service, told the recent Clinical Meeting of the AMA that many problems involved in taking the oral vaccine out of the laboratory and into mass production had not been solved.

In light of this fact, both the AMA House of Delegates and Dr. Burney urged that the widest possible use of the Salk vaccine be encouraged. Dr. Burney said that large numbers of the U. S. population, including almost half of the children under five, had not been fully vaccinated with the effective Salk vaccine.

Dr. Burney said the problems of integrating the oral vaccine into the present program of immunization against polio "are many and complex."

"Only the future can tell whether control of poliomyelitis will be accomplished through a live, orally administered vaccine, the killed vaccine, or a combination of both," Dr. Burney said.

* * *

The Food and Drug Administration issued stricter rules, some effective Jan. 8 and others effective March 9, governing

promotion and marketing of prescription drugs. The new regulations are designed to insure safe use of the drugs.

Under the new regulations, manufacturers must disclose hazards, as well as advantages, of the drugs in promotional material sent to physicians. Manufacturers can be denied permission to market drugs they refuse to permit FDA inspection of manufacturing methods, facilities, controls or records.

The FDA deferred until later action on its proposal to require every package of drugs sold to pharmacies to contain an official brochure on their use and hazards. The AMA proposed instead that it be given the responsibility of getting such information directly to physicians.

* * *

Foreign interns who failed medical examinations last September may remain in this country until at least next July 1.

In cooperation with the State Department, the AMA agreed to extend for six months a Jan. 1 deadline for dismissal of foreign interns unless they pass the examinations through the Educational Council for Foreign Medical Graduates.

From the Association of American Medical Colleges

A total national effort to provide financial assistance for medical students, to cost \$86,000,000 over the next five years, was presented to medical educators, in a report before the 71st annual meeting of the Association of American Medical Colleges, as a solution to the twin problem of declining medical school applications and rising educational costs.

Made by a special committee of the AAMC, the report is an intensive study of financial status and problems of medical students.

"Financial assistance to medical students is needed," the report says, "1. To obtain more well-qualified applicants to the medical profession, and 2. To eliminate personal financial need as a bar to the study of medicine."

Noting that by 1965 we will need 750 more medical graduates a year to keep up

the present ratio of 132 doctors to 100,000 people, the report asserts that parents, who now pay the major share of medical school costs for their children, are less and less able to bear the rising financial burden. Thus, many students who might otherwise select medicine as a career are turning to graduate education in the natural and social sciences, where costs are less and financial assistance is greater.

The **minimum** number of medical students needing financial assistance is estimated as 2,150 in a class of 7,750 (28 per cent) or 8,600 students in all four classes in medical schools over the country each year. With the average cost of four years of medical education \$11,642, the need is put at \$4,000 in loans and \$4,000 in scholarships or other stipends for each of these students. This means \$17,200,000 a year over the five year period, 1961-66.

The program to meet this need, the report recommends, should; leave the student free to select his own school, impose no obligation on his postgraduate training or practice, be sufficient to eliminate the need for outside work during the school year, and be available at the beginning of the first year and continue through the four years.

From The National Foundation

NEW YORK, N. Y.—The state of Arkansas has been the principal beneficiary in the allocation of March of Dimes funds raised in the state over the past 23 years, it was disclosed in a financial summary prepared by The National Foundation.

More than 95 cents of every dollar from Arkansas' March of Dimes has been put to use in aiding the state's disease victims. Of the remaining 5 per cent accruing to the national headquarters, a large portion also has come back to Arkansas in shipments of polio vaccine and gamma globulin and in other nationwide services conducted by The National Foundation.

The summary covers the period since the first March of Dimes was held in January, 1938, and compares the net total of funds raised in the state with amounts

made available to Arkansas through Sept. 30, 1960.

In this period, Arkansas' 75 chapters of the March of Dimes organization raised a net total of \$5,074,685.03 at an average fund raising cost of less than 9 per cent. Of this amount, \$4,841,529.41 has been available to the county chapters in carrying out their extensive patient aid programs, including advances of \$2,511,192.34 from the national office to meet local emergency situations.

ANNOUNCEMENTS

The Southeastern Surgical Congress will meet in Miami Beach, Florida March 6-9 with headquarters at the Deauville Hotel, for its Twenty-ninth Annual Assembly. Hotel reservations should be made early, and for further information address A. H. Letton, M. D., Secretary-Director, The Southeastern Surgical Congress, 340 Boulevard, N. E., Atlanta 12, Ga.

The New Orleans Graduate Medical Assembly will be held March 2-9, 1961 in New Orleans, La. Further information may be obtained by writing The New Orleans Graduate Medical Assembly, 1430 Tulane Avenue, New Orleans, 12, La.

At the meeting of the Board of Regents of the American College of Chest Physicians held in Washington, D. C. on No-

Answer to What Is Your Diagnosis?

CLINICAL DATA:

58-year-old colored male. Dyspnea on exertion for five weeks. Malaise and 12 lb. weight loss. No acid-fast organisms of the sputum.

ANSWER—Sarcoidosis

X-RAY FEATURES — There is pronounced bilateral hilar lymph node enlargement with a radiating patchy infiltrate in both lungs.

vember 28, 1960, a resolution was adopted to establish a relief fund for Cuban members of the College who have been exiled temporarily from their country. The Board of Regents voted to contribute \$5,000 to launch the fund and contributions are being solicited from College members and others who are interested. The Cuban Chapter of the College was founded in 1940 and now has 74 members.

The 3rd World Congress of the International Federation of Gynaecology and Obstetrics will be held in Vienna from September 3 to 9, 1961. The scientific program will include main lectures, colloquia, fireside conferences, etc.

Contributors to the American Medical Education Foundation from Arkansas during November 1960:

Dr. LeMon Clark, Fayetteville	.....\$25.00
Dr. E. M. Cooper, Jonesboro	..... 25.00
Dr. Milton Deneke, West Memphis	..... 25.00
Dr. Thomas Durham, Hot Springs	..... 12.50
Dr. Kenneth Duzan, El Dorado	.... 10.00
Dr. Hugh Edwards, Searcy	..... 50.00
Dr. Jean Gladden, Harrison	..... 50.00
Dr. Alfred Hathcock, Batesville	.... 20.00
Dr. Julius H. Hellums, Dumas	..... 10.00
Dr. C. Lewis Hyatt, Monticello	.... 25.00
Dr. Wm. A. Jackson, Little Rock	.... 25.00
Dr. O. J. T. Johnston, Batesville	.... 10.00
Dr. C. C. Long, Ozark	..... 5.00
Dr. Stuart McConkie, Hot Springs	..... 12.50
Dr. Friedman Sisco, Springdale	.... 5.00
Dr. Carl Wilson, Fort Smith	..... 50.00
Mrs. Guy R. Farris, Little Rock	..... 6.00
Hempstead County Med. Auxiliary	..... 8.00
Howard-Pike County Med. Aux.	.... 5.00
Sevier-Polk County Med. Auxiliary	..... 2.00

	\$381.00

Contributors to the American Medical Education Foundation during October, 1960 from Arkansas:

Woman's Auxiliary to the Arkansas Medical Society	.....\$100.00
Board Members of the Woman's Auxiliary to the Arkansas Medical Society	.....\$ 65.90

	\$165.90

Obituary

Dr. W. B. Black, colored physician who had practiced in Newport since 1938, died November 10 in a Newport hospital. He was 70 years old. He had practiced for 20 years in Little Rock before moving to Newport. He was a member of the Jackson County Medical Society, the Arkansas Medical-Dental Pharmaceutical Association, and the American Medical Association. He is survived by his widow and three daughters.

PERSONAL AND NEWS ITEMS

Dr. Barney M. Wisinger has joined the Frederick C. Smith Clinic staff in the department of internal medicine at Marion, Ohio. Dr. Wisinger is a native of Pine Bluff and graduated with honors in 1954 from the University of Arkansas School of Medicine.

Dr. L. H. McDaniel of Tyronza was the speaker for the Faith Forum held at the Osceola Methodist Church on Sunday afternoon, November 27. His subject was "The Church and Problems of the Aging."

Four sons of the late **Dr. W. A. Jones**, early physician of Arkansas, were recently reunited for the first time since 1915. The reunion took place in Waldo at the home of one of the sons, **Dr. T. Harold Jones**. The others present with their families were **Dr. W. Edgar Jones** of Seminole, Oklahoma, **Rev. G. Elliott Jones** of Morrilton and **Herbert A. Jones** of Portland, Oregon. **Mrs. Carolyn Dobbins** of Shreveport, La., daughter of the late Dr. Jones, was also present.

Dr. John Gill, Texarkana, spoke to the Lewisville Rotarians in November on pending bills in Congress that will affect the health care and taxes of the people of the United States if passed.

FEATURES

The PTA of Eudora heard **Dr. B. Z. Binns** on "Meeting Emotional Needs" at its November meeting.

Attending the Clinical meeting of the American Medical Association in Washington November 27-December 1 were **Dr. James M. Kolb** of Clarksville, **Dr. Fount Richardson** of Fayetteville, **Dr. R. B. Robins** of Camden, **Dr. J. H. McCurry** of Cash and **Dr. L. H. McDaniel** of Tyronza.

Dr. James W. Sanders, Tuckerman, was the guest speaker at the November meeting of the Newport Business and Professional Women's Club.

The new addition and expanded facilities to the Boone County Hospital are now in use. Open house and dedication was held December 11, 1960.

Proceedings of Societies

The Ouachita County Medical Society elected new officers for 1961 at its regular monthly dinner meeting at the Camden Hotel, Camden, Arkansas December 6, 1960. Those elected were president, **Dr. W. H. Pruitt**; president-elect, **Dr. R. C. Lewis**; secretary, **Dr. R. B. Robins**; delegate, **Dr. L. E. Drewrey**, and alternate, **Dr. L. V. Ozment**. This is the 34th year for **Dr. Robins** to serve as secretary.

The Second Councilor District of the Arkansas Medical Society held its annual fall meeting at Robertson's Rendezvous in Searcy on Thursday evening, December 1.

Guest speakers were **Dr. James W. Headstream** who spoke on "Urological Diseases of the External Genitalia," and **Dr. M. F. Kilbury, Jr.** who spoke on "The Acute Abdomen."

The annual election of officers was held. The new officers are **Dr. Paul Gray**, Batesville, president, and **Dr. Alfred Hathcock**, Batesville, secretary.

Dr. J. J. Monfort, state president, made his official visit to the Second Councilor District at this time.

The Pulaski County Medical Society held its annual election on December 6th, 1960 and elected the following officers: **Dr. John William Smith**, president; **Dr. John McCollough Smith**, president-elect; **Dr. Guy R. Farris**, vice-president; and **Dr. Carl E. Wenger**, recording secretary.

The Grant County Medical Society met December 5 for their Christmas family night potluck supper. Meeting with their families in the home of **Dr. and Mrs. Jack Irvin** were **Dr. and Mrs. Miles Kelly**, **Dr. and Mrs. Faber Carter**, **Dr. and Mrs. Guy Martin** and **Dr. and Mrs. Curtis Clark**.

A short scientific panel-discussion on "Community Medical Problems" followed the meal.

The Ninth Councilor District held its regular meeting on Thursday, December 1, 1960, at Spring Lake Restaurant at Bellefonte, Arkansas. **Dr. David M. Russell** of Jasper presided. Physicians were present from Harrison, Jasper, Clinton, Mountain Home, Marshall, Eureka Springs, Berryville, Fayetteville, Rogers, and Detroit, Michigan.

Following a social hour and dinner the scientific program was presented by **Dr. Glen O. Turner** and **Dr. W. E. Wooldridge**, both of Springfield, Missouri. **Dr. Turner** gave a detailed report on "Anticoagulants in Heart Disease," and **Dr. Wooldridge** presented "Antibiotics in Dermatoses with Special Reference to the Use of Griseofulvin." Special guest, **J. Lex Moore, D.D.S.**, oral surgeon of Harrison, gave a brief discussion on the technique of performing dental surgery on patients on anticoagulants, in connection with **Dr. Turner's** presentation.

Woman's Auxiliary

The Woman's Auxiliary to the Bowie and Miller County Medical Societies met for their November meeting in the home of **Mrs. Henry Carney**, Texarkana, with **Mrs. Carney**, **Mrs. Richard Schnelle**, **Mrs.**

FEATURES

Charles A. Smith and Mrs. Henry Hawkins as hostesses.

Mrs. Walter C. Barnes, president, conducted the business meeting which was opened by Mrs. Cyrus Klein. Guest speaker was Mrs. A. A. Little, who gave a talk on "It Pays to Know Your Community."

Hostesses for a meeting of the Woman's Auxiliary to Pulaski County Medical Society at its November meeting were Mrs. Bill Dave Stewart, Mrs. J. Forrest Henry, Mrs. G. Thomas Jansen, Mrs. James R. Morrison and Mrs. William I. Porter. Mrs. James Newbill discussed "The History of the Medical Auxiliary." Assisting her on the program were Mrs. Charles Oates, Mrs. Hoyt Choate and Mrs. Erner Jones. Past presidents were honored guests. Mrs. A. T. Gillespie provided piano music.

February 4, 1961 was the date set for the annual benefit-style show sponsored by the Woman's Auxiliary to the Jefferson County Medical Society. The date was set at the annual Christmas luncheon held in December at the Pine Bluff Country Club. Hostesses for the luncheon were Mrs. John K. Walker, Mrs. W. R. Nixon and Mrs. A. E. Pollard.

The Polk-Sevier Woman's Auxiliary to the Arkansas Medical Society met in November in the home of Mrs. Pierre Redman, president of the two-county auxiliary. Mrs. Clifton Long of Ozark, state president, was at the meeting. Also the president-elect of the state auxiliary, Mrs. Hershel Wilmoth of Glenwood, was present. Members of the auxiliary attending were Mrs. R. C. Dickinson of Horatio, Mrs. Roger Dickinson and Mrs. C. E. Kitchens of De Queen. Mena members attending were Mrs. John Wood and Mrs. Calvin Austin. Guests were Mrs. Ben Redman and Mrs. Autrey Horne.

The Boone County Auxiliary met in November to formulate plans for the organization of a Hospital Auxiliary for the Boone County Hospital. Mrs. Ulys Jackson, president of the Boone County Medi-

cal Auxiliary, presided, with Mrs. G. Allen Robinson, Mrs. Henry Kirby, Mrs. William P. Barron, Mrs. Rhys Williams and Mrs. Kenneth Siler of the Medical Auxiliary present. Mrs. Sam McNair, Fayetteville, president of the Arkansas Hospital Auxiliaries, met with the group to explain the benefits members of an auxiliary would have in belonging to the hospital auxiliary and in rendering service to the community.

The newly organized Mississippi County Women's Auxiliary to the Medical Society elected the following officers at a recent meeting: Mrs. E. A. Shaneyfelt of Manila, president-elect; Mrs. Edward L. Taylor, Blytheville, president; Mrs. James O. Asher of Blytheville Air Force Base, secretary; Mrs. T. N. Rodman of Leachville, treasurer. Mrs. C. C. Long of Ozark, state president, and Mrs. Herschel Wilmoth of Glenwood, president-elect, were special guests.

Book Reviews

ELECTROCARDIOGRAPHY. Michael Bernreiter, M.D. J. P. Lippincott Co. Philadelphia, Pa. Pp. 134. 1958. \$5.00.

This textbook of electrocardiography duplicates in most respects previously published books on this subject. It is brief and terse, a commendable feature. However, the reviewer feels that the explanations in many instances are inadequate and the book is oversimplified to the point of rendering it difficult to understand. This textbook does not fulfill a useful niche in the teaching armamentarium at this time. AK

GENERAL PATHOLOGY. Second Edition. Sir Howard Florey. W. B. Saunders Co. Philadelphia and London. Pp. 918. 1958.

This textbook of general pathology edited by Dr. Florey, the Professor of Pathology at the University of Oxford School of Medicine, is an excellent one. He has chosen outstanding authors in various fields to write various sections of the book. Most of these authors are from the Oxford group. The book is written well and there is a real attempt to bring in basic research as it applies to pathology. This book is complementary to the usual textbooks of pathology rather than competitive in that it makes no effort to cover a detailed organ by organ analysis of pathology. This book is highly recommended to both the medical student and practitioner as supplemental reading in pathology rather than a textbook in the ordinary sense of the word. AK

FUNDAMENTALS OF CLINICAL HEMATOLOGY, by Byrd S. Leavell, M.D., Professor of Internal Medicine Physician-in-Charge, Hematology Section, School of Medicine, University of Virginia, Attending Physician, University of Virginia Hospital, and Oscar A. Thorup, Jr., M.D., Associate Professor of Internal Medicine, School of Medicine, University of Virginia, Attending Physician, University of Virginia Hospital.

This text book is well written. It has a rather conventional format. It is not unusual in any way. It does have excellent references and bibliography. It has a quite brief chapter on Hemotologic Techniques. There is a rather full chapter on Laboratory Procedures. The discussion of the newer agents used in the treatment of leukemia and lymphoma is quite comprehensive. The disorders of clotting are also well discussed. This book is recommended to medical students, general physicians and internists as being comprehensive and well written, although it is not encyclopedic. AK

RYPINS' MEDICAL LICENSURE EXAMINATIONS, Topical Summaries and Questions, edited by Walter L. Bierring, M.D., M.A.C.P., M.R.C.P., Edin. (Hon.), Director, Division Gerontology, Heart and Chronic Diseases, Iowa State Department of Health; Secretary-Editor Federation of State Medical Boards of United States; Professor of Medicine Emeritus, State University of Iowa, College of Medicine; Former member National Board of Medical Examiners; American Board of Internal Medicine; Chairman Emeritus of American Board of Preventive Medicine; Iowa State Board of Medical Examiners; Former Iowa State Commissioner of Health. Ninth Edition, pp. 805, published by J. B. Lippincott Company, Philadelphia and Montreal, 1960.

This textbook of Medical Licensure Examinations is well written and complete. The reviewer feels that this type of cramming for examinations is not the best means of preparation. However, a textbook such as this will serve as a guide as to what one might reasonably study in preparation for the licensure examinations. This text is fairly easy to read. It is as complete as a text could be on this rather all-inclusive topic. It is heartily recommended as a guidepost to preparation for medical licensure examinations. AK

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

SUSCEPTIBILITY AND IMMUNITY TO COMMON UPPER RESPIRATORY VIRAL INFECTIONS—THE COMMON COLD

Studies with volunteers show that many viruses are found in the nasal secretions of people suffering from the common cold

and that physiologic and psychologic factors influence the symptoms. Infection causes immunity, but immunologic control may be difficult.

Common upper respiratory viral infections, despite their frequency, have been something of an enigma to physicians and scientists in general. Little has been known about their specific etiology and the factors that influence susceptibility or resistance to infection. A prevalent view, even within recent years, has been that there is a common cold virus to which only man is susceptible and which causes recurrent symptomatic infections without establishing immunity of the host. This concept now appears to be far too simple.

The present report gives results of experimental challenge of volunteer subjects with one of the common cold agents under controlled conditions.

Donors with naturally acquired typical common colds in the months from September to May have contributed specimens of nasal secretion. The secretions have been filtered free of bacteria and cells and stored at minus 90° F.

Students ranging in age from 18 to 48 have been challenged with a nasal secretion, usually diluted 100 times; a virus grown in tissue culture, or a salt solution. Symptoms were recorded for each day of the following week.

Nasal discharge was the symptom most uniformly recorded. It was the only symptom that was rated as severe. Sore throat, malaise, postnasal discharge, headache, cough, and sputum were frequent symptoms of moderate severity. Feverishness and chilliness were reported infrequently.

BACTERIA CULTURED

Bacteriologic cultures of the nasal specimens before and on the fourth, seventh, and ninth days after challenge were made for the detection of pathogenic microorganisms in the respiratory secretions. Some of the volunteers harbored staphylococci, hemolytic streptococci, or pneumococci in their prechallenge specimens. There was no apparent relationship between the presence of these microorgan-

GEORGE GEE JACKSON, M.D.; HARRY F. DOWLING, M.D.; TRUMAN O. ANDERSON, M.D.; LOUISE RIFF, B.S.; JACK SAPORTA, M.S.; and MARVIN TURCK, M.D., *Annals of Internal Medicine*, October, 1960.

isms and the development of clinical symptoms.

Among a control group of volunteers who received uninfected buffer solution, there was a direct and statistically significant relationship between the usual number of colds per year reported by the subject and the likelihood of his developing symptoms of a cold in the experiment. Thus, among 23 subjects who reported five or more colds per year and who received the noninfectious control inoculum, 26 per cent developed a cold according to the criteria used in the experiments. Among the subjects who reported fewer natural colds and received uninfected material, there was a proportionately smaller number of experimental colds.

Attitudes exhibited before challenge showed that cold symptoms would be less likely to be reported by individuals who (1) did not believe they would develop a cold, (2) thought that emotional status did not influence physical status, and (3) reported feeling no concern or worry over anything going on in their lives at the time of experimental challenge. A positive response to these three attitudes made it more likely that cold symptoms would be reported by the individual.

In regard to the effect of chilling on the common cold, the data show two important features: (1) among uninfected subjects, chilling did not activate latent viruses with the production of a clinical cold; (2) among subjects who received a uniform challenge, chilling did not increase the susceptibility to clinical infection.

Previous tonsillectomy had no influence on susceptibility or symptoms, nor did the smoking history of the person.

DISCUSSION

The causative agents of the common cold appear to be several, perhaps many, different viruses. These viruses produce both clinical and subclinical infections in man. Each of the viruses can produce a variety of clinical syndromes, commonly classified under categories of common cold, undifferentiated upper respiratory infection, and "flu." The common cold viruses cause afebrile, acute coryza in the great majority of persons. With a few exceptions, these viruses have not been isolated, named, or well characterized.

The common cold viruses are present in infectious form in both the cells and the fluid of nasal secretions; the titer is sufficient to suggest that droplet spray could be an effective means of communicating infection. Person-to-person transfer, presumably by droplet spray, was observed to cause clinical illness in approximately 10 per cent of persons exposed under experimental conditions and in 17 to 55 per cent among family members. The viruses in the community at different times, however, appear to be immunologically different, and some seem to cause sharp waves of epidemic illness, whereas others are more endemic.

The strong positive correlation between the usual number of colds per year by history and symptomatic reaction to an innocuous instillation appears to establish a wide range of difference in the proneness of persons to develop rhinorrhea or coryza. The data do not permit a conclusion as to whether physiologic or psychologic facts are dominant. On either basis, it is surprising that among the subjects who were hyperreactors to an uninfected solution, there was no greater susceptibility to clinical illness from a secretion containing an infectious agent.

For centuries men have associated the common cold with environmental chilling. The present data seem adequate to conclude that the basis of the association is not the direct activation of latent viruses by physical cold or physiologic reaction to chilling, since these factors did not produce colds without infection.

IMMUNITY

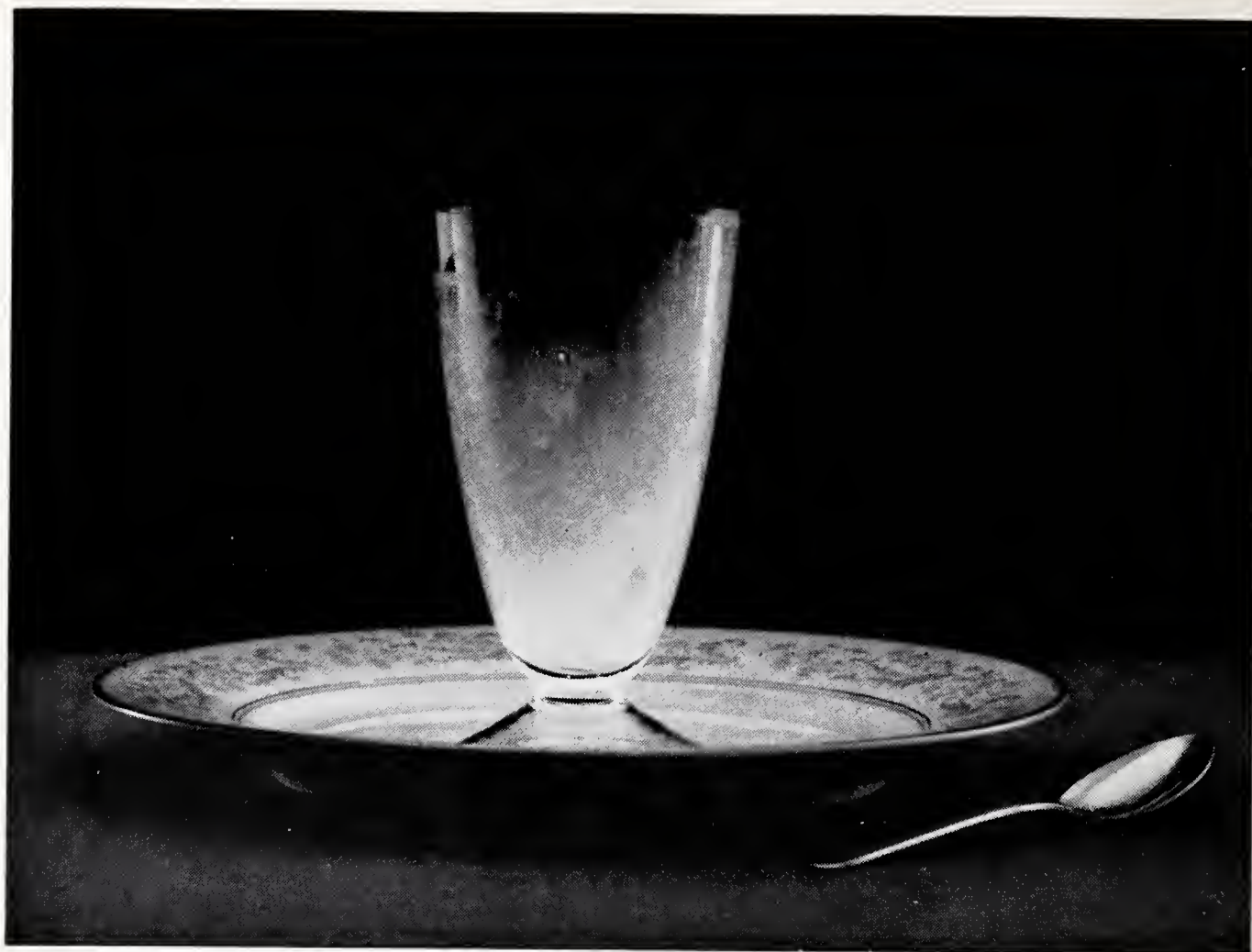
Previous epidemiologic and experimental observations that show insignificant immunity to the common cold have failed to recognize the number of specific viruses involved. Neutralizing antibody has been demonstrated in the serum and nasal secretion, and immunity to a specific rechallenge is as complete as that observed for influenza under natural conditions of infection. The duration of immunity is not known, but it appears to remain through at least one respiratory disease season.

These observations require the postulate that each viral upper respiratory illness is a specific infection, and thus that the num-

FEATURES

ber of viruses responsible for these infections is very great. Under the concept that the common cold is caused by many specific agents, each of which elicits an adequate immune response, the likelihood of dis-

covering a predominant common cold virus that maintains this role for a long time is quite unlikely. If this is the case, the logistics for immunologic control of the common cold may be very difficult.



does the bowel take kindly to no-bulk diets?

The bowel, designed to operate best under the stimulus of a bolus of waste, is seldom at rest under normal conditions. But the new bulkless liquid diets which have taken the country by storm, although they may be a useful road to weight loss, may also lead to constipation or bowel irregularities.

Metamucil adds a soft, bland bulk to the bowel contents to stimulate normal peristalsis and also retain water within the stools to keep them soft and easy to pass. Thus Metamucil, with an adequate water intake, will avert or correct constipation in the dieting patient. Metamucil also promotes regularity through "smoothage" in all types of constipation.

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Short History Gastric Ulcer*

EDWARD A. MARSHALL, M.D. AND ROBERT T. MURPHY, M.D.**

Seventy-four patients with short history gastric ulcer seen consecutively during the eleven-year period of 1947-1958 at Huron Road Hospital have been reviewed and evaluated. For the purpose of this report "short term" has been defined as including only those patients whose symptoms have been present for less than one year. More than half of these patients have been the personal patients of one of us (E.A.M.) so that continuous observation has been possible in this group. Seventy-one of the total have been traced so that the follow-up is 96 per cent of the entire series.

Of particular interest is the possible relationship of gastric ulcer to gastric carcinoma. Many observers are of the opinion that all gastric ulcers are suspect and should undergo immediate resection. Others have expressed the opinion that a period of two to three weeks of intensive antacid administration should precede surgery and should preclude surgery if roentgen evidence of healing is shown. In the present group of patients this latter method of management was employed in the majority of instances. Although an occasional gastric carcinoma with ulceration has been shown to undergo healing of the ulcer on medical therapy, this is actually a rare occurrence and should not greatly obscure the differential diagnosis between gastric ulcer and gastric cancer. With present day refinements of radiographic technique the x-ray diagnosis of

carcinoma versus ulcer is made more readily and a diagnostic error of 10 to 15 per cent as quoted in older literature is no longer true.

The present group contains no patients in whom gastric carcinoma was found at surgery or developed subsequently. The period of observation is considered to be sufficiently long that had any carcinomas been present they would have had ample opportunity to have manifested themselves, and in the majority of instances would have resulted in the death of the patient during the period of study as the average duration of life from the time of diagnosis of carcinoma of the stomach has been shown to be from two to three years irrespective of treatment. The preceding statements are not intended to imply that carcinoma of the stomach does not occur in gastric ulcer. In reviewing these patients and their records it was immediately apparent that patients undergoing surgery for gastric ulcer at the time of the initial diagnosis and in whom carcinoma was found at operation would not be diagnosed as ulcer but rather as carcinoma and thus would not appear in the records reviewed. Until completion of a study of all carcinomas of the stomach for the incidence of ulcer in this particular group, we can make no estimate of the actual incidence of carcinoma in gastric ulcer.

However, it is possible to emphasize that a significant number of gastric ulcers are benign as evidenced by the 74 quoted cases. Healing of benign ulcers in nine to nineteen days was possible in all but

*Presented at the Arkansas Academy of General Practice, October 14-15, at Little Rock, Ark.

**From the Marshall Research Foundation, Huron Road Hospital, Cleveland 12, Ohio.

17 cases. A specific medical program was utilized in therapy. Ambulatory therapy consisted of aluminum hydroxide 1.3 grams every one-half hour for sixteen hours a day, followed by 2.6 grams plus 240cc of milk at bedtime and in two and four hours after retiring. In addition a tablet consisting of calcium carbonate 0.5 gram, magnesium oxide 0.25 gram, phenobarbital 0.016 gram, and atropine sulfate 0.0002 gram was given every two hours during the day for a total of nine doses daily. If undue diarrhea occurred with this tablet, substitution of tablets containing calcium carbonate 0.65 gram, phenobarbital 0.016 gram, and atropine sulfate 0.0002 gram was made; these were given at the same time intervals. Diet was unrestricted. Larger amounts of antacids were used initially in hospitalized patients as has been described previously. (1) The importance of large doses of antacids and the use of a half-hourly treatment schedule is necessary as even the most efficient of antacids such as sodium bicarbonate have been found to be ineffective by intragastric pH measurement after 40 minutes. (2, 3)

Of the 17 cases in which healing was unsatisfactory or incomplete, gastric resection was performed in each instance. In ten, resections were done for fear of carcinoma, in none of these was carcinoma found. In the remaining seven, resection was done for complications of ulcer including hemorrhage, perforation, and non-stenotic obstruction. There was one postoperative death. Although gastric resection was not necessary in this group for the presence of carcinoma, it proved to be an effective treatment of ulcer as there was only one recurrence of ulcer following resection. The recurrence rate in medically treated ulcer was considerably higher with 17 recurrences in 70 cases, but repetition of medical treatment was uniformly successful in controlling symptoms. Although four patients in the medically treated group are now dead, none died as a result of ulcer or cancer of the stomach. The apparent superiority of surgical versus medical treatment must be tempered with the known side effects of gastric resection such as

dumping, nutritional deficiency, steatorrhea, anemia, weight loss, and other sequelae. These are admittedly less in limited gastric resection, particularly with Billroth I resection and anastomoses, and in general, resection of the gastric antrum is believed to be adequate to control gastric ulcer so the complications are less in this group, although mortality does occur with resection.

The average age of patients with gastric ulcer has previously been shown to be higher than those with duodenal ulcer. The average age in the present series was 48.5 years and 10 individuals were beyond the age of 65. Males predominated 2.5 to 1. The average period of follow-up in the 53 patients who had no recurrence of gastric ulcer was 47.8 months. Of those who recurred, one recurred within 12 months, an additional eight in the second year, three more in the third year, and the last five in the fourth year. The average time of recurrence in these 17 patients was 34.3 months.

The complications of ulcer noted in the group consisted primarily of hemorrhage and obstruction. There were 14 instances of hemorrhage and in six of these patients the hemoglobin fell to less than 8.0 grams. Melena was twice as frequent as hematemesis. Obstruction in all cases was of the non-stenotic type which was relieved by medical therapy. Obstruction also occurred in 14 patients, and although two were operated in no instance was complete obstruction by stenotic scar found. In only one instance was the gastric ulcer found to be located on the greater curvature; of the remaining ulcers, lesser curvature ulcers were two and one-half times more frequent than antral ulcers. Granulation tissue in the floor of the ulcer crater showed no significant difference between treated and untreated patients, but the rapidity of healing and prompt relief of symptoms was greater in the treated patients.

SUMMARY

1. 74 consecutive cases of short history gastric ulcer have been reviewed.
2. 71 cases (96%) have been traced to date.
3. Short history has been defined as consisting of symptoms less than one year in duration.

4. The average duration of symptoms was four and one-half months.
5. All cases were treated with half-hourly day and hourly night gastric neutralization utilizing large doses of antacids.
6. Prompt healing by x-ray visualization occurred in from nine to 19 days in 54 patients.
7. Operations were performed on 17 patients because of complications of ulcer or inadequate roentgenologic response to therapy.
8. The absence of carcinoma in the present series is due to the method of analysis.
9. The majority of gastric ulcers are believed to be benign.
10. All patients with gastric ulcer should be given a period of intensive medical therapy for from two to three weeks prior to possible gastric resection.
11. None of the preceding statements apply to cases which are frankly malignant roentgenographically at the initial examination.

(1) Marshall, E. A., and Sass, M. Peptic ulcer; treatment with unrestricted diet—report of 1,500 cases. *Medical Times*, June 1955.

(2) Marshall, E. A. What is adequate medical treatment of peptic ulcer? *Rev. Gastroenterol.* 19:897, 1952.

(3) Marshall, E. A. Unlimited diet in peptic ulcer — one thousand cases. *Ohio State Med. J.* 49:1085, 1953.

Immunization*

LOUIS F. RITTELMAYER, JR., M.D.**

"At one time preventive medicine was synonymous with public health. Nowadays it is an integral part of total medical care. . . . How much time can a physician spend doing preventive medicine, when his patients demand so many of his curative skills? The answer to such a question might be as much as the immediate care of the sick will allow." (1) This question was raised in an editorial in the *Journal of the American Medical Association* less than a year ago. The tentative answer given obviously is not the final one—it isn't even an answer, really, but an evasion. The editorial's concluding sentence does put things in proper perspective: "Every disease or illness that is prevented allows that much more time to devote to the sick."

An important aspect of preventive medicine in the practice of most general physicians is that of immunizing patients against infectious diseases. The recent development of polio and mumps vaccines and rabies antiserum are the latest additions to a long list of powerful weapons in the fight to promote health and prevent illness.

It is an unfortunate fact, however, that many millions of people even in the United States, where these preparations are available to almost everyone, still are not properly immunized. The existence of this situation can be explained in part by the ignorance and apathy of many people in matters of health. The history of the Salk vaccine, for example, has been one of alternating periods of shortage and surplus, depending on the whims of a fickle public. But this isn't the whole story; physicians are partly responsible also.

Much of the ignorance and apathy is our fault, because they are results of our indifference. Too many of us, I fear, fail to take the time necessary to properly inform and motivate our patients. In

short, our biggest job in preventive medicine is that of "selling" the public on the need for it. A refrigerator full of vaccine is no help to the person who cannot be persuaded to accept prevention as part of his medical care.

The following schedules for immunizing infants, children and adults against certain infectious diseases represent what I believe to be *one* good way of accomplishing an objective in prevention. Others recommend slightly different schedules, but I am sure that most variations you will read about are of no real importance. Certainly, modification in schedules is necessary for many patients—for reasons of illness, travel, poor memory, etc. What is reasonable should not be difficult for you to determine, because already you have certain routines based on a knowledge of this subject.

DEFINITIONS

First, there are a few definitions that I should like to review simply to help refresh your memory. Terminology in this field is sometimes ambiguous, but I feel that it is easy to avoid confusion if only we can agree on how to define our terms.

Immunity is an enhanced resistance to a disease. It does not necessarily imply *total* resistance, an ideal that is seldom attainable except by having the disease.

There are two kinds of immunity, *active* and *passive*. Active immunity is developed by an individual as a consequence of invasion by a pathogenic organism or its toxin. An example of this type is that which results from having a disease or being given a vaccine. It is the longer-lasting of the two. Passive immunity is received from an animal or another person that has acquired active immunity. This includes maternal transplacental immunity as well as that conferred by antisera. Passive immunity may be conferred more quickly in urgent situations.

An *antigen* is any substance capable of causing the formation of antibodies when

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introduced into an animal. One type of antigen is *toxin*, a poisonous substance produced by an organism. *Antitoxin* is a substance in serum that neutralizes toxin.

Toxoid is a toxin that has been detoxified without decreasing its antigenicity.

Vaccine is a suspension of attenuated or killed infectious agents. It too is an antigen.

PREPARATIONS

I will mention briefly the methods of preparing various immunizing agents. (2) One obvious reason for knowing this is the potential danger to a person from the medium in which the preparation is made. For example, influenza and mumps vaccines, which are prepared from cultures grown in chick embryos, should not be given to anyone allergic to eggs.

Diphtheria and tetanus toxoids and pertussis vaccine are developed from organisms grown in prepared culture media. Polio vaccine is made in a tissue culture using monkey kidney.

Smallpox vaccine, which is actually cowpox vaccine, contains organisms grown in calf skin. There are now two kinds of rabies vaccine—one is prepared from tissue cultures of rabbit central nervous system tissue, the other is of duck-embryo origin.

Antitoxins, hyperimmune sera, convalescent sera, and gamma globulin are all extracts of animal or human serum. As a rule, horse serum is used for tetanus and diphtheria antitoxin. Pertussis and most other so-called convalescent sera are prepared from human blood. When in doubt, always read the instructions enclosed with the antiserum. When animal serum is used, serious, sometimes fatal, reactions are not uncommon. Sensitivity tests are not always reliable but should be done before animal serum is given.

SCHEDULE FOR INFANTS

Figure 1 shows the schedule followed when the physician has the opportunity to begin inoculations in the newborn. Diphtheria-pertussis-tetanus-polio combination should be given at the ages of 2, 3 and 4 months. Boosters may be given at

Figure 1. Schedule for Infants

2 months	DPT-POLIO
3 months	DPT-POLIO
4 months	DPT-POLIO and SMALLPOX
1 year	DPT-POLIO
2 years	DPT-POLIO

the age of one year and between the second and third birthdays. Smallpox vaccine may be given with the third injection of DPT-polio.

Immunization may be started when the mother comes in for her six-week checkup if she brings the baby with her. It should not be delayed beyond the age of 2 months except for reasons of illness. The immune mechanism of infants is not fully developed this early; but combining vaccines help raise the antibody titers of all of them to appreciable levels. I feel that the young infant needs protection particularly against pertussis and therefore do not postpone initiating his shots until his antibody-building power is fully developed. Giving two boosters instead of one during the first three years of life will effectively promote sufficient immunity for later on, even if the initial series is begun as early as 6 weeks.

Smallpox vaccine should be given to infants before they reach the age of 6 months. When they are older, they can more easily scratch the vaccination site and spread infection. If possible, vaccination should not be postponed until the child is ready to start school, because severe reactions, including encephalitis, are more common then.

SCHEDULE FOR PRESCHOOL CHILDREN

Figure 2 shows the schedule for children between the ages of 2 and 6 years.

Figure 2. Schedule for Pre-School Children

- (1) If immunized as infant:
Boosters of DPT-POLIO and SMALLPOX just before starting school.
- (2) If not immunized as infant:
same schedule as for infant.
- (3) If child has had pertussis:
omit pertussis vaccine—give DT toxoid and POLIO vaccine.

Children who received all their inoculations as infants need only receive boosters of DPT-polio and smallpox vaccine before they enter kindergarten or the first grade. If a child is brought to you for the first time when he is in this age group, the same schedule as outlined for infants is indicated.

As a child grows older, the danger of his getting encephalitis from pertussis vaccine increases. For this reason, it is best to omit it (and give only DT toxoid) when feasible; e. g., if he has already had the disease.

SCHEDULE FOR SCHOOL CHILDREN

Figure 3 shows the schedule for school children whose basic inoculations have been accomplished. Boosters of DT (0.5 cc) every three or four years and one smallpox vaccination before the child enters junior high or high school are adequate. At the present time, it is not known how many booster shots are needed to provide adequate protection against polio. Perhaps the answer will be known in a few years.

Figure 3. Schedule for School Children

-
- (1) If basic immunizations done earlier:
 - (a) DT every 3 or 4 years. Use adult mixture after age of 10.
 - (b) SMALLPOX before entering junior high or high school.
 - (c) POLIO.....?
-

For children who have not had previous inoculations, I advise basic immunization against polio, diphtheria, tetanus and smallpox. Figure 4 shows the schedule. For polio, the routine consists of three injections, the first two a month apart,

Figure 4. Schedule for School Children

-
- (2) If basic immunizations **not** done earlier:
 - (a) Begin with DT and POLIO.
 - (b) 1 month later, repeat DT and POLIO.
 - (c) 1 month later, DT and SMALLPOX.
 - (d) 7 and 19 months after second POLIO, repeat.
 - (e) 1 year after third DT, repeat it; boosters every 3 or 4 years.
-

and a third seven months later, followed in one year by a booster. No pertussis vaccine is administered.

The combined DT toxoid is given monthly in 3 doses, followed by a booster in one year. The adult combination of DT (containing much less diphtheria toxoid than the standard mixture) should be given to children over the age of 10. This is done to reduce the likelihood of untoward reactions, which are frequent when large doses of diphtheria toxoid are given to older children.

SCHEDULE FOR ADULTS

Adults are undoubtedly a most neglected group of patients as far as immunization is concerned. Except for members of the armed forces, few adults have adequate protection, in spite of the fact that inoculations are available at a cost most people can afford. Here too physicians must share the blame. Although other factors are important, certainly many more adults would be willing to receive their shots if only we spent a little more time impressing them with the need.

Figure 5 shows the schedule for adults. Polio vaccine should be given up to the age of 40 according to the same schedule as for school children. It may also be given to anyone over 40 who wants it. Protection against diphtheria should be provided those persons who work in hospitals, clinics, laboratories and other places where contact with diphtheria organisms is unavoidable. This can be done in one of two ways: (1) perform Schick tests, and immunize those with *positive* reactions (a positive result indicates susceptibility; a negative result indicates immunity); or (2) give the adult combi-

Figure 5. Schedule for Adults

-
- (1) POLIO—same as for school children.
 - (2) DIPHTHERIA—for those exposed or likely to be (nurses, doctors, etc.): SCHICK TEST—if neg., do nothing; if pos., immunize (adult DT comb. once a month X2, booster in one year).
 - (3) TETANUS—as above (DT comb.); or TETANUS TOXOID, two injections one month apart, and booster in one year.
-

nation of DT toxoid, two injections, one month apart, followed by a booster in one year.

If full strength diphtheria toxoid is used in the first method, it is best to perform a Moloney test before inoculating the person. This test consists of diluting diphtheria toxoid 1 to 20 and giving 0.1 cc intradermally. If there is no reaction, give the toxoid; if there is a positive reaction (redness, wheal, etc.) do not immunize, because of the danger of a severe reaction.

Schick and Moloney tests may be repeated every 6 months, if necessary. Simply doing this will give a person a satisfactory level of immunity eventually.

Tetanus toxoid may be given in combination with diphtheria toxoid, as indicated above, or it may be given alone. The important thing to remember is that it should be given—to *everybody*, young and old, men, women and children. Trauma is too common a feature of everyone's life to be ignored. Antitoxin is far too dangerous to be used unnecessarily, while toxoid is safe and highly effective. The schedule for tetanus toxoid is two injections, a month apart, followed by a booster in one year.

SPECIFIC INDICATIONS

The immunization schedules I have just presented are "routine"—that is they are designed to protect normal, healthy people against diseases that may not be an immediate threat. Routine protection of large groups decreases the over-all incidence of these diseases and the number and size of epidemics, as well as providing individual personal protection.

There are situations, on the other hand, that require immediate action to combat an impending threat to the health of an individual person or group. The following suggestions are intended to cover most situations with which you are likely to be confronted. The following is not a complete list of inoculations; for example, no attempt is made to include diseases likely to be found only while travelling in foreign countries. The specific preventive problems most frequently encountered in

the United States will, however, be discussed.

Any wound involving penetration of the skin is an indication for protection against tetanus. The person who has never had tetanus toxoid must be given at least 1500 units of tetanus antitoxin, after skin testing for sensitivity to horse serum. In these cases, I also give the first injection of toxoid and instruct the patient to return in one month for another. There is no evidence to suggest that giving toxoid interferes with the action of the antitoxin.

Anyone who has ever had a complete series of toxoid should *not* be given antitoxin but instead should be given a booster injection of 0.5 cc of toxoid. It is not only safer but far more effective to boost a pre-existing active immunity than to administer antitoxin, which confers only passive protection. For this type of booster, *fluid* tetanus toxoid should be used, whereas for basic immunization and routine boosters, alum precipitated or a comparable long-acting type of toxoid is used. (The reason for this is that fluid toxoid gives a more immediate rise in antibody titer. The effect of alum precipitated toxoid develops more gradually but lasts for a longer time.)

Family exposure or other close exposure to diphtheria is an indication for Schick testing. In addition, those who have previously been immunized should be given a booster of fluid diphtheria toxoid. Those who have never been immunized should be given therapeutic doses of oral penicillin, if they are not sensitive to penicillin. Anyone with a positive Schick test who is exposed to diphtheria should be observed closely for evidence of disease and given antitoxin at the first suspicion of its presence.

Infants who have not been immunized and who are exposed to pertussis or are suspected of having an early case of the disease should be given hyper-immune serum. Infants who are not ill should, in addition, be started on the DPT-polio series.

Family exposure to infectious hepatitis is an indication for gamma globulin. The long incubation period of this disease

allows ample time to protect most contacts. The severe, sometimes fatal, sequelae of infectious hepatitis justify the expense of providing this protection.

Typhoid fever has been controlled largely through programs of sanitation rather than immunization. On the other hand, the continued sporadic occurrence of this disease demonstrates that complacency is unwarranted. People who live in areas not served by purified water supply systems and children going to camp should be inoculated with typhoid vaccine. Three weekly injections constitute the basic series, with boosters required every year. Intradermal injection of 0.1 cc is one method of immunization, and it is relatively free of systemic reactions. Some physicians prefer to give the basic series hypodermically, in doses of 0.5 cc each, with boosters being given intradermally.

A woman in the first trimester of pregnancy who has never had German measles and is exposed to it should be given a large dose (20 cc) of gamma globulin. Preferably, 10 cc from each of two separate batches should be used, to provide the greatest assurance of effectiveness. The incidence of severe deformities in the offspring of women who actually have this disease during the first trimester is about 10 per cent. (3) This is a much lower incidence than has been reported previously, but it still is significantly higher than the over-all average.

Rabies continues to be a serious problem because many areas are without adequate laws to enforce inoculation of dogs and also because of the presence of rabies in wild animals. Recently developed preparations have enhanced the effectiveness and lessened the danger of anti-rabies management. Duck embryo vaccine is safer than the old vaccine prepared from rabbit central nervous system tissue.

Hyperimmune serum given within 24 hours of a bite increases the patient's resistance greatly. It should be followed by 14 injections of duck embryo vaccine. If the animal can be kept under observation, the vaccine may be withheld until the fate of the animal is apparent. The location and severity of the bite, as well

as the degree of suspicion of the animal, would determine the need for giving hyperimmune serum. To be most effective, it must be given early.

When a case of smallpox appears in a community, everyone in the area should be vaccinated immediately. This will effectively protect the individuals involved and also stop the spread of the epidemic.

Several years ago, in the hills of middle Tennessee, a public health officer was confronted with the prospect of an uncooperative community in the face of a smallpox epidemic. Despite the occurrence of smallpox, the local residents were unwilling to accept the vaccination offered by the health department. No amount of persuasion could change their minds. One day, when there still were only sporadic cases of the disease, a sign appeared in several places in the community stating that residents desiring to find out whether or not they were *susceptible* to smallpox could do so by coming to the health department for a "test". Within a week every person in the county had been "tested" for smallpox, and of course, had also been protected from it.

This incident exemplifies what can be done by a physician who is willing to use his ingenuity, as well as his time and energy, to promote health. It will never be as dramatic to prevent smallpox or whooping cough as it is to cure a person severely ill with the disease. But the satisfaction gained from maintaining good health in those entrusted to our care should more than compensate for the absence of drama.

Whenever someone speaks about a disease and discusses the way to diagnose it, he starts off by saying, "First, you have to *think* of the possibility." It is not too different in the case of routine inoculations—if you don't *think* of the possibility of your patient being killed or crippled by these infectious diseases, you may forget to protect them. It is therefore necessary to make *immunization* a part of your *routine* history and physical—or you won't "think of it."

No distinction need be made between children and adults. Everybody needs *at*

least the basic series of tetanus toxoid injections.

I will mention just a few examples of how the routine "thought" of immunization can be put to use.

- (1) The unimmunized three-year-old child who is brought to you with a cut on his foot needs tetanus antitoxin, of course. But he also needs his first DPT-polio shot. Give it to him!
- (2) The unimmunized teenager, who comes in for care of his acne, needs tetanus toxoid and polio vaccine, at least, and he may be a candidate for smallpox and diphtheria protection. Immunize him!
- (3) The unimmunized young adult who visits you for a life insurance physical examination needs tetanus and polio inoculations. Explain the reasons to him, and in most cases he will cooperate.

These are examples in which it is easy to do only the specific job requested. But in each case there is a clear need for providing protection against less apparent and less urgent threats to health.

The physician who claims to offer comprehensive medical care to his patients must consider his job incomplete until he succeeds in making preventive medicine a part of his daily practice. This involves giving his patients—in all age groups—the inoculations they need.

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Arkansas State Cancer Commission

W. R. BROOKSHER, M.D.* AND LUCY R. UTTERBACK**

The Arkansas State Cancer Commission completed 15 years of service at the close of the last fiscal year, June 30, 1960, focusing emphasis on diagnosis and/or treatment for the medically indigent cancer or cancer-suspect patient at one of the seven tumor clinics in Arkansas, designated by the Commission. During the year 4,934 visits were made to the clinics, 1,363 patients were examined for the first time, 843 positive diagnoses were made, 748 were placed under medical care, and follow-up was made for 4,856 cancer patients known to the tumor clinic registers and the Central Cancer Registry.

In response to a request for information for the practising physician in the state as to procedure to secure such services for patients and just what services are available, this is written.

REFERRAL

The largest of the tumor clinics, University Hospital Tumor Clinic, Medical Center, staffed by full-time men, members of the University of Arkansas School of Medicine faculty, is subject to its own admission regulations. Referral of new patients may be made by a letter from the physician giving his findings, tentative diagnosis and treatment already prescribed. Patients formerly known to this tumor clinic may return when appointment has been confirmed after request from the doctor or patient.

Referral to the other six tumor clinics may be made by letter or memorandum from the referring physician direct to the clinic, or through the Central Office of the State Cancer Commission, 912 West Sixth Street, Little Rock. This referral should also include a resume of the patient's personal history and physical findings. These six tumor clinics are staffed by members of the medical profession on a voluntary basis, who receive no remuneration from Cancer Commission funds.

*Secretary and Medical Director, Arkansas State Cancer Commission.

**Administrative Officer, Arkansas State Cancer Commission.

The tumor clinic directors and their staffs, numbering 165 doctors, are members of the medical societies of their respective counties and are on the staffs of the general hospitals in which the tumor clinics are located.

Only patients with a malignancy or suspected malignancy should be referred to the tumor clinics, which do not function as detection centers.

Because of transportation involved, referral of a patient nearest to a patient's home is recommended, and this procedure is helpful in distributing the patient load.

CLINIC MEETING SCHEDULE

The tumor clinics, their locations and meeting schedules, listed according to patient load are: (See opposite page)

ELIGIBILITY AND SERVICES AT TUMOR CLINICS

Patient status, eligibility and services for cancer patients at the University Hospital Tumor Clinic, Medical Center, are determined by that institution.

Eligibility and admission to the other six tumor clinics are determined by the doctor, who accepts the patient for treatment on a non-fee basis. Patients, who are not considered medically indigent, will be referred as private patients.

A Tumor Register is maintained at each tumor clinic by the tumor clinic secretary, personnel of the State Cancer Commission, whose duties also include taking of medical dictation, keeping tumor records and follow-up of all cancer patients and related social work duties as required in patient management.

To meet requirements of the American College of Surgeons hospitals housing tumor clinics are incorporating in the Tumor Registers basic data on all patients with a diagnosis of cancer, in-patient and out-patient, public and private, to make possible the total cancer population of the hospital for statistical purposes.

Hospitalization is provided by the State Department of Public Welfare for tumor clinic patients who meet eligibility requirements of that agency. Request for this service is made by the patient's doctor to the patient's county welfare director and clearance of the patient's eligibility for hospitalization before referral to a tumor clinic is advisable in order to prevent delay. Request for hospitalization may be made to the Welfare Department after the patient is admitted to the tumor clinic also.

Hospitalization may be provided by State appropriated funds available to the State Cancer Commission for patients admitted to tumor clinics, who do not meet eligibility requirements of the Welfare Department, but who are considered medically indigent at the tumor clinics.

Hospitalization for tumor clinic patients is limited to 14 days and includes routine care, food and other services and supplies necessary for proper hospitalization. Diagnostic hospitalization is limited to the first three days. Per diem payment is made to hospitals based on

90 per cent of the reimbursable costs up to a maximum of \$20.00.

Domiciliary care may be provided for tumor clinic patients by funds of the Arkansas Division, American Cancer Society, administered by the State Cancer Commission for patients who are not eligible for this service through auspices of the Welfare Department.

No provisions are made for terminal care by the State Cancer Commission. Terminal patients, who qualify, may receive nursing home care through auspices of the Welfare Department.

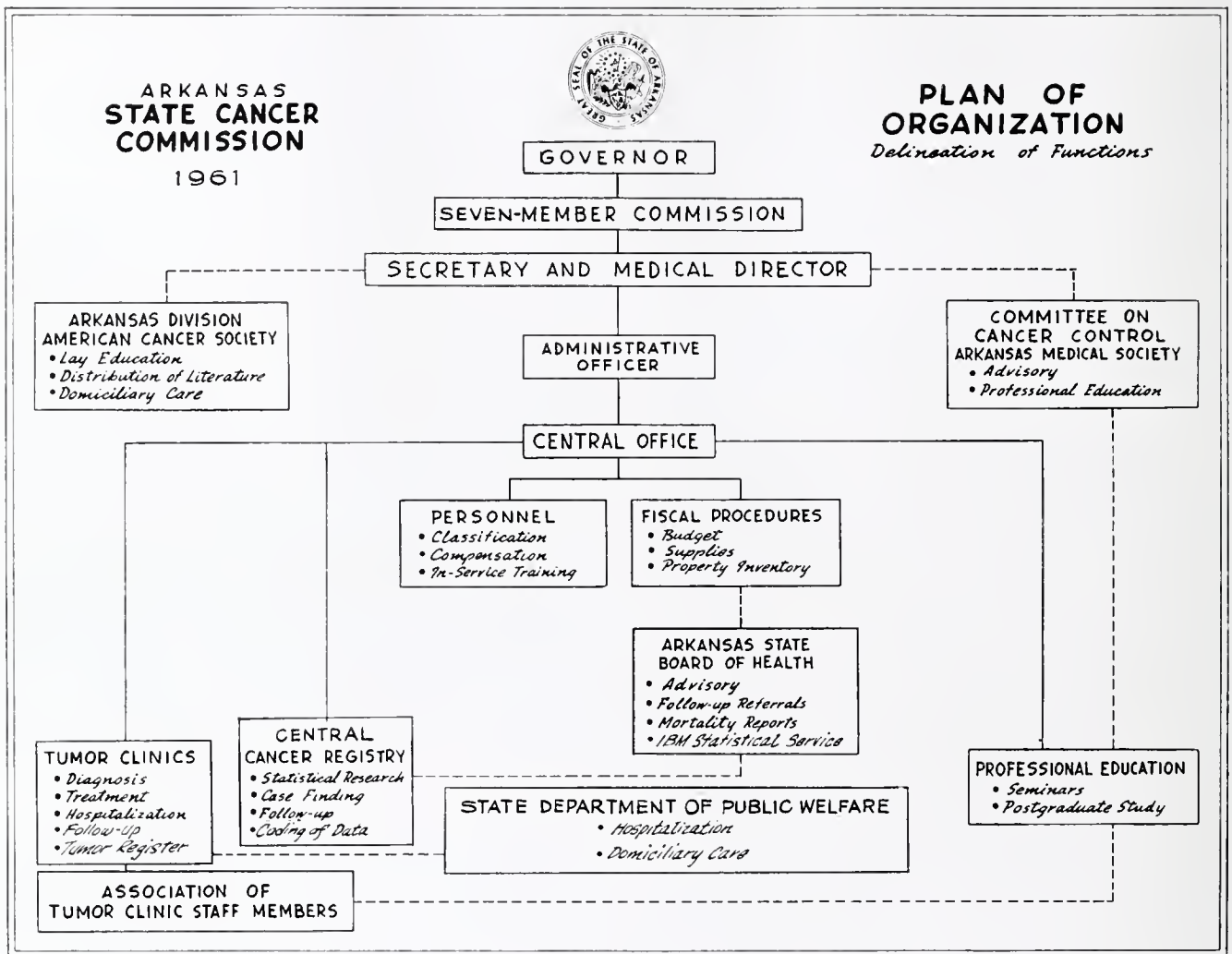
Services available to tumor clinic patients include: diagnostic procedures, treatment, professional services, x-ray therapy through the generosity of radiologists and hospitals owning and operating x-ray therapy machines, radium and cobalt, and follow-up visits at regular intervals.

STATISTICAL SERVICES

The Central Cancer Registry, staffed by Cancer Commission personnel and

Clinic	Meeting Schedule
University Hospital Tumor Clinic Medical Center Little Rock, Arkansas	Wednesday at 8 a.m. and 11 a.m. (Surgery) Daily except Friday and Saturday from 9 a.m. to 4 p.m. (Gynecology) Thursday at 8 a.m. and 11 a.m. (Surgery and Skin Cancer)
St. Vincent Tumor Clinic St. Vincent Infirmary Little Rock, Arkansas	Wednesday at 11:30 a.m. (Surgery, Gynecology and Skin Cancer)
Southeast Arkansas Tumor Clinic Davis Hospital Pine Bluff, Arkansas	Tuesday at 9 a.m.
Northeast Arkansas Tumor Clinic St. Bernard's Hospital Jonesboro, Arkansas	Wednesday at 9 a.m.
Bowie-Miller Counties Medical Society Tumor Clinic St. Michael's Hospital Texarkana, Arkansas	Tuesday—New patients report 9 to 11 a.m.; old patients at 12:30 p.m.
South Arkansas Tumor Clinic Warner Brown Hospital El Dorado, Arkansas	Wednesday between 11 a.m. and 12:30 p.m.
Northwest Arkansas Tumor Clinic Boone County Health Unit Boone County Hospital Harrison, Arkansas	2nd and 4th Wednesdays of each month at 9 a.m.

ARKANSAS STATE CANCER COMMISSION



housed at the Medical Center, includes 14,000 tumor records abstracted from case histories of patients admitted to tumor clinics in Arkansas since 1947. This total includes 777 new cancer patients during the last fiscal year, concluded June 30, 1960. During the year 5,736 tumor records, representing active cases were coded in the Central Registry and punched by the IBM Service Bureau, inaugurating the collection of statistical information by machines instead of manual tabulation. Through the cooperation of the IBM Department of the Arkansas State Board of Health, current cancer data is now being punched, prior to sorting and tabulating. In addition to statistical services, the Central Cancer Registry participates in cancer reporting and follow-up.

SERVICES PROVIDED BY HOSPITALS

General hospitals, housing tumor clinics, contribute much free service to the

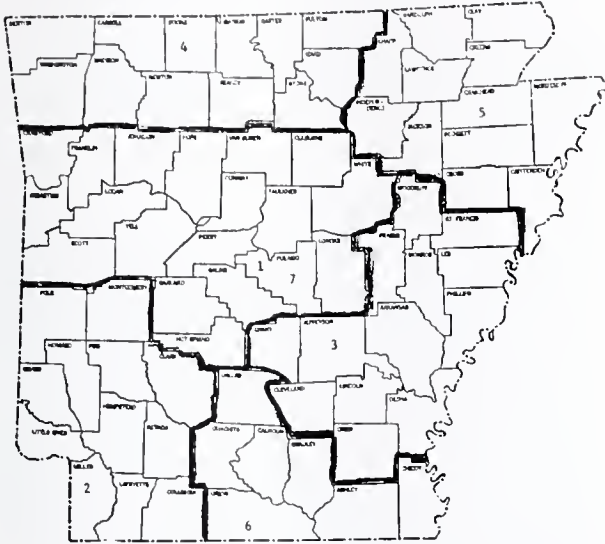
cancer program, including office space and telephone for the tumor clinic secretary, examining rooms and their maintenance, nursing service during clinic sessions, linens, medications and other required items for an approved clinic.

With the exception of University Hospital no reimbursement is made to hospitals for out-patient services at tumor clinics.

AMERICAN CANCER SOCIETY

The Arkansas Division, American Cancer Society, and its county organizations, cooperate effectively with the State Cancer Commission in its program of lay and professional education, providing dressings and loan closet items for cancer patients, who are at home or in nursing homes, and by providing funds for domiciliary care when needed by patients at tumor clinics.

ARKANSAS STATE CANCER
COMMISSION DESIGNATED
PERMANENT TUMOR CLINICS*
FOR INDIGENT CANCER PATIENTS



1. LITTLE ROCK — Tumor Clinic, University Hospital, Medical Center.
2. TEXARKANA — Bowie-Miller Counties Medi-

Note: Heavy lines indicate clinical area, or counties, served by the respective Tumor Clinic therein.

*Approved by American College of Surgeons.

cal Society Tumor Clinic, St. Michael's Hospital.

3. PINE BLUFF — Southeast Arkansas Tumor Clinic, Davis Hospital.
4. HARRISON — Northwest Arkansas Tumor Clinic, Boone County Hospital, Boone County Health Unit.
5. JONESBORO — Northeast Arkansas Tumor Clinic, St. Bernard's Hospital.
6. EL DORADO — South Arkansas Tumor Clinic, Warner Brown Hospital.
7. LITTLE ROCK — Tumor Clinic, St. Vincent Infirmary.

PROFESSIONAL EDUCATION

Facilities of Cancer Commission personnel and its Central Office are available to the Association of Tumor Clinic Staff Members to perform duties of the secretary and treasurer of the Association, and to arrange for seminars with out-of-state speakers at least once a year.

The cooperation and contribution of many individuals and many agencies make possible the cancer control program in Arkansas, coordinated by the State Cancer Commission.

◆ What's NEW ◆

Recent Advances in Cardiovascular Surgery

FRED B. BERRY, M.D.*

The surgical repair of interatrial septal defects, most ventricular septal defects, congenital pulmonary stenosis, and some varieties of Tetralogy of Fallot is now well standardized and fairly well accepted by practising physicians. With the greater safety of extra corporeal circulation, and a better understanding of the postoperative problems in cardiac surgery, surgical attack on additional more complex problems has become feasible.

This attack is strengthened by two new developments. The first of these is coronary artery perfusion. Several interesting methods have been described, consisting essentially of placing the subject on total cardio-pulmonary bypass, cross clamping the ascending aorta, opening the aorta just above the aortic valve, and inserting various knobbed, knurled, perforated or plain metal or plastic cannulae into the left or left and right coronary arteries. (1, 2) A cannula with a bulbous expansion of its tip, set in the ostium of the artery and held in place with a purse string suture has been quite satisfactory in our experience. Only the left coronary artery need be perfused for relatively short procedures, at a flow rate between 100-250 ccs. of blood per minute delivered through a separate pumphead and arterial line. Moderate hypothermia may be added as an adjunct.

A second development is that of centrally induced profound hypothermia, as championed by Sealy and Brown of North Carolina. (3, 4) With the use of the heat exchanger described by Brown (5), patients are cooled to 10-20 degrees centigrade (esophageal temperature) or until cerebral cortical activity ceases as indi-

cated by flattening of the EEG. The pump can be run at a very slow rate or actually turned off, and intracardiac procedures such as the repair of large VSDs can be carried out in a bloodless field. Less profound hypothermia (28-22 degrees C. esophageal temperature) affords sufficient lowering of oxygen demand in the bypassed heart that the aorta can be cross clamped for a sufficient length of time to permit resection of aneurysms or procedures on the aortic valves. (6) This less profound hypothermia is being rather widely used at the present time.

With these advancements in basic techniques, aortic insufficiency and acquired stenosis can now be approached with much greater facility, and the time necessary for plastic procedures is made available. Aortic insufficiency is at the present usually treated by reapproximating widened commissures or excluding the non-coronary cusp, converting the structure to a bicuspid valve. If there is deficient valve tissue, a Teflon flap can be provided. Although patients having such operations have appeared benefited initially, longer term results have not been reported in any quantity as yet. Persistence of a low diastolic pressure has been seen in a fairly large proportion of these patients postoperatively, a finding which is disconcerting but as yet of undetermined significance.

Considerable attention is being devoted at a number of centers toward development of a good aortic valve prosthesis (7, 8), but no good proven device is available today.

Aortic stenosis is also receiving considerable attention. (9) The anatomical characteristics of acquired stenotic valves

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have come under close scrutiny, as a result of which considerable progress has been made in devising a surgical attack as in the approach used by Mulder. (10, 11) The very deformed, thickened, fibrotic, and calcified cusps are incised along their bases and the calcific plaques are removed, insofar as possible, care being taken to preserve continuity of the cusp surfaces. Thickened, beaded excrescences can be similarly shaved off. The cusp at the conclusion of this procedure is seen to have regained some of its pliability and appears lengthened due to removal of part of the scarred interior. As the pathologic changes are more pronounced along the free margins, the procedure combined with careful separation of the commissures results in giving the cusp at least a measure of flap or hinge action, permitting greater opening in systole and better approximation in diastole. Insufficient numbers of patients have been operated upon, and the followup period is too short for any accurate appraisal of the procedure, but preliminary reports have been encouraging.

Standardization of perfusion techniques and their present day relative safety have resulted in the use of direct vision approaches to the mitral valve, especially in rheumatic hearts. (12, 13, 14, 15, 16) These patients tolerate surgery rather poorly as a group, due in part to diffuse myocardial injury resulting from rheumatic fever. When carefully prepared, however, they tolerate the surgery reasonably well, providing that it is not too prolonged and that considerable improvement in valvular mechanic's efficiency is achieved. These remarks particularly apply to patients with considerable mitral insufficiency. For several reasons such patients as a group have less cardiac reserve than patients with mitral stenosis. First, the condition is self propagating. A small valvular defect causing some regurgitation is soon followed by marked atrial enlargement which produces dilatation of the AV ring, which in turn results in added insufficiency, and so on. In addition, the left ventricle is greatly overworked as adequate systemic flow may be achieved only by greatly increased total

output. Finally, the marked atrial dilatation commonly present tends to result in early atrial fibrillation, with concomitant inefficient systoles.

The mitral valve is approached from the right chest, the atrial incision being between the interatrial septum and the entrance of the right pulmonary veins. With this approach, the posterior commissure is the most accessible and it is this portion of the valve which usually accounts for most of the insufficiency. The anterior portions of the cusps may approximate satisfactorily even in advanced mitral insufficiency. Plicating the mitral ring results in reapproximation of the cusps posteriorly as the commissure is narrowed. The plication is commonly carried to the point of excluding blood flow through the posterior portion of the cusps. Care must be taken not to narrow the valve opening excessively. If good approximation of the cusps is still not achieved because of shortening or absence of valve substance, a Teflon stent may be placed to bridge the area of deficiency.

Successful plication of relatively pure mitral insufficiency results in rapid marked mechanical advantage to the left ventricle. Most of its contractile force now results in systemic flow and filling of the left ventricle is decreased with reduction in dilatation which gives increased force of contraction. These advantages may more than offset the trauma of operation and the patients may have a very satisfactory convalescence.

Unfortunately, most patients with mitral insufficiency have considerable mitral stenosis also. Here it is much more difficult to achieve marked mechanical improvement of valve action and one seldom achieves total relief of either component. Because the ill effect of both conditions are compounded in the patient, convalescence is more difficult. Thus, the work load of the left ventricle may not be greatly diminished although systemic output is increased, and its dilatation may not be greatly lessened.

Selected cases of mitral stenosis are probably best carried out under direct vision. Patients who have evidence of atrial

thrombi as manifested by emboli and demonstrated by angiography should be seriously considered for open repair as the blind approach carries a discomfortingly high mortality rate. Also, many centers are now carrying out operations for restenosis under direct vision. They feel the initial unsuccessful operation indicates a more difficult local problem. The majority of surgeons still prefer blind finger commissurotomy for the ordinary patient with mitral stenosis rather than the open heart technique. A few, however, utilize extra corporeal circulation routinely for mitral commissurotomy, as they feel a better commissurotomy is achieved, and additional defects as fused chordae tendinae and papillary muscles might be corrected. It would seem that the standard commissurotomy for the younger good risk patients is so effective as to render more complicated procedures unnecessary. The crux of the problem is whether deterioration of the patient some years after surgery is due to continued active rheumatic fever or incomplete restoration of normal function of the diseased valve at the original surgery. If the latter is the usual reason, the role of direct vision surgery will need re-evaluation.

Ventricular aneurysms occurring after myocardial infarction present an interesting surgical problem. The aneurysm wall is formed by thinned out scar which has replaced the original myocardium. The rhythmical increases in ventricle pressure cause gradual enlargement of the aneurysm until it may contain more blood than the rest of the ventricular chamber. With each contraction the aneurysm bulges out and some ventricular blood enters the sac. In diastole blood leaves the aneurysm and enters the main left ventricular chamber. This to and fro circulation of blood greatly increases the work load of the remaining left ventricular musculature, resulting essentially in progressively more severe heart failure. The lesion is eventually fatal from intractable failure, rupture of the aneurysm, or thromboembolic phenomena.

A number of case reports of resection of ventricular aneurysms have been pub-

lished. (17, 18, 19) Bailey has described an aneurysm clamp with long teeth by which he clamps the neck of the sac (a well developed localized bulging with a discrete neck is sometimes seen but more often there is a more diffuse bulging and a wide neck), trims off the aneurysm sac, removing if possible all the scar, until healthy muscle is seen on the cut surface. As there commonly are thrombi lining the sac, the clamp is loosened to wash out all clots and any air bubbles. The long teeth hold the clamp in place and the ventricle is closed when the clots have been washed out. The cut surface is then closed in layers. The resulting smaller ventricular chamber empties much better. Left ventricular work output is greatly reduced and even patients in severe failure may be able to resume work. Extra corporeal circulation with exclusion of the left ventricle permits a more unhurried, calmer resection and repair, especially when combined with some degree of hypothermia. As these patients are commonly in failure, unloading the left ventricle while it is being operated upon gives greater safety to the procedure. Results are sufficiently good that increasing numbers of these patients are being operated upon, and the operation is accepted in most centers.

Progress is being made against many other problems in cardiac surgery, but the examples of progress in acquired heart disease cited here were selected to demonstrate the strides being made in this area, as surgery for congenital heart disease is universally accepted today. The final usefulness of the procedures discussed will be many years in assessing but all have been sufficiently tested to justify their increased use in clinical medicine.

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**A TEACHING SEMINAR
FROM THE
UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE**

Quantitative Urine Cultures*

JOSEPH H. BATES, M.D.**

In recent years post-mortem studies have demonstrated that active pyelonephritis may be undiagnosed in 20% to 30% of the cases. (1) The failure of clinical diagnosis is not due to inability to recognize the classic symptoms and signs of the disease, but due to the paucity of clinical manifestations of pyelonephritis in many patients. The problem is complicated further by the fact that pyuria and albuminuria may be absent in the presence of active infection. (2) These circumstances then have forced the physician to rely heavily on the urine culture as an important laboratory aid in the diagnosis of pyelonephritis. However, the normal urethra is known to contain bacteria that may contaminate urine collected for culture even if a catheterized specimen is taken. (3) Consequently a method of counting the bacteria in the urine has been developed in an effort to determine the significance of a positive urine culture.

The principle on which the quantitative urine culture technique is based is that urine is an excellent media for growth of the common pathogens of the urinary tract. When small numbers of these bacteria are inoculated into urine they multiply rapidly to a concentration of a million or more per millimeter of urine. Thus, if a small number of bacteria is dislodged from an infected focus in the kidney into the urine, one would anticipate large numbers of bacteria in the bladder urine. There are exceptions to this rule however, such as a fastidious micro-organism that grows poorly in urine (this is uncommon), an obstruction of the ureter to interfere with discharge of bacteria into

the bladder, a bacteriostatic agent in the urine, a high rate of urine flow combined with a brief pooling period in the bladder thus not allowing time for maximal numbers to develop, or an infection in the kidney not involving or draining into the renal tubules. It should be emphasized that these instances are the exception rather than the rule and are not frequently encountered in practice.

There is now very good evidence in the form of clinical investigation combined with post-mortem studies to support the value of quantitative urine cultures. Kass (4), Hall (5), and Sanford (6), have all made significant contributions in this regard. Kass studied 25 consecutive cases of acute pyelonephritis with classical symptoms and signs of the disease and all had more than 100,000 bacteria per ml. of urine and all but one had more than 1,000,000 bacteria per ml. of urine. These results were reproducible. He then studied individuals not thought to have pyelonephritis and noted that the bacterial counts were 10,000 per ml. or less, frequently the counts were less than 1,000 bacteria per ml. Kass also studied the incidence of asymptomatic bacilluria in an outpatient department. Using 100,000 bacteria per ml. as the dividing line between contamination and infection he found that 6% of all patients studied had true bacilluria; the incidence in diabetic women was 18%, in pregnant women at term 11%, and in patients with indwelling catheters in place over 96 hours 9%. In another study by Kass (1) with post-mortem examinations combined with quantitative bladder urine cultures obtained from the subjects at the time of autopsy a substantial correlation between true bacilluria and active pyelonephritis was

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**Chief Resident in Medicine.

demonstrated. The work of Hall and of Sanford has also shown a clear-cut dividing line between those patients with active infection and those with urinary contamination. Their patients could be divided into two distinct groups—those with 1,000 or less bacteria per ml. of urine and those with 10,000 bacteria or more per ml. of urine. It is important to point out that all studies have shown that only 2% to 3% of patients with true bacilluria fall between 10,000 and 100,000 bacteria per ml. of urine. It is, in part, for this reason that many laboratories have arranged their urine culture technique to detect up to only 10,000 colonies per ml. Urine with bacteria above this level are reported simply as having greater than 10,000 bacteria per ml. of urine. The physician then knows that in all probability the count is 100,000 bacteria per ml. or higher.

The actual method of quantitative urine culture is a simple one that can be done in any laboratory that has facilities for bacteriological studies. It is very important that the urine be cultured within two hours after collection or, if not, stored in refrigeration until the time of culture because of the rapid multiplication of the organism in the urine at room temperature. The method used at the University of Arkansas Medical Center is as follows: Using a sterile pipette, 0.1 ml. of urine is placed on a blood agar plate and also on an eosin methylene blue agar plate. The plate is then tilted in such a way to allow the urine to run across the plate from one margin to another. Then a wire loop is streaked through the urine multiple times so that the urine is dispersed evenly over the plate. After incubation for 24 hours at 37 degrees centigrade, the plates are examined and the colonies counted. When the patient has true bailluria, the plate is usually covered with innumerable colonies that run together and are impossible to actually count. These plates obviously have greater than 1,000 colonies present; when this is multiplied by 10 to correct to a 1 ml. volume of urine, the report is given as "greater than 10,000 bacteria per ml. of urine." For plates that have less than 1,000 colonies present

it is permissible to divide the plate into four quadrants and count only the colonies in one quadrant. This is possible because the colony growth is distributed evenly over the plate and because the exact determination of the number of bacteria present is not critical. All values are rounded off to the nearest multiple of 10. For example, if one counted 38 colonies in a quadrant this could be rounded off to 40 colonies, then multiplied by 4 to give 160 colonies on the plate and then corrected to a 1 ml. volume and reported as containing 1,600 bacteria per ml. of urine.

Since the urine is cultured on both blood agar and eosin methylene blue agar, all pathogens of the urinary tract with few exceptions will grow and partial or complete identification of the organism can be accomplished at the same time the colony count is done. If the count is 10,000 or greater sensitivity studies can be started and be ready for interpretation 24 hours later.

Many laboratories also prepare a gram stain of the urine at the time the urine culture is planted. When bacteria can be seen on a smear of uncentrifuged urine there is an 80 percent correlation that a significant number of bacteria are present. This then can give the physician an early lead concerning the outcome of the culture and can serve as a check on the validity of the culture. When bacteria are seen on gram stain and the culture shows a low number of bacteria or no growth the possibility of laboratory error should be considered.

When routine quantitative urine cultures are available it permits the physician to take "clean voided" urine for culture in most instances and thus eliminates the undesirable use of bladder catheterization for urine collection. If the patient is able to cooperate and if no active cellulitis exists near the urethral meatus the clean voided urine is obtained as follows: The urethral meatus and glans penis or labia minora are meticulously cleaned with sterile cotton balls and green soap followed by 1-1000 Zepharin solution. The patient is then asked to void and after an estimated 100-200 ml. of urine is passed

the urine stream is interrupted with a sterile container and the sample collected. It is important to point out that the patient does not stop voiding to allow for the urine container to be placed in the path of the urine stream. It is equally important that the container be withdrawn from the urine stream before the bladder sphincter contracts. This then is called a "mid stream" urine collection. The initial urine flowing from the bladder washes out the urethra so that the normal bacterial flora frequently found in this area are not collected for culture, or if bacteria are present the numbers are small and thus a low bacteria count is reported by the laboratory. If the patient is not able to cooperate and completely understand his part in the collection procedure a catheterized specimen is taken. This technique of "mid stream" collection has proven to be very satisfactory in both male and female patients with the occasional exception in the female patient who has a high bacterial count in the voided specimen and a low count in the catheterized specimen.

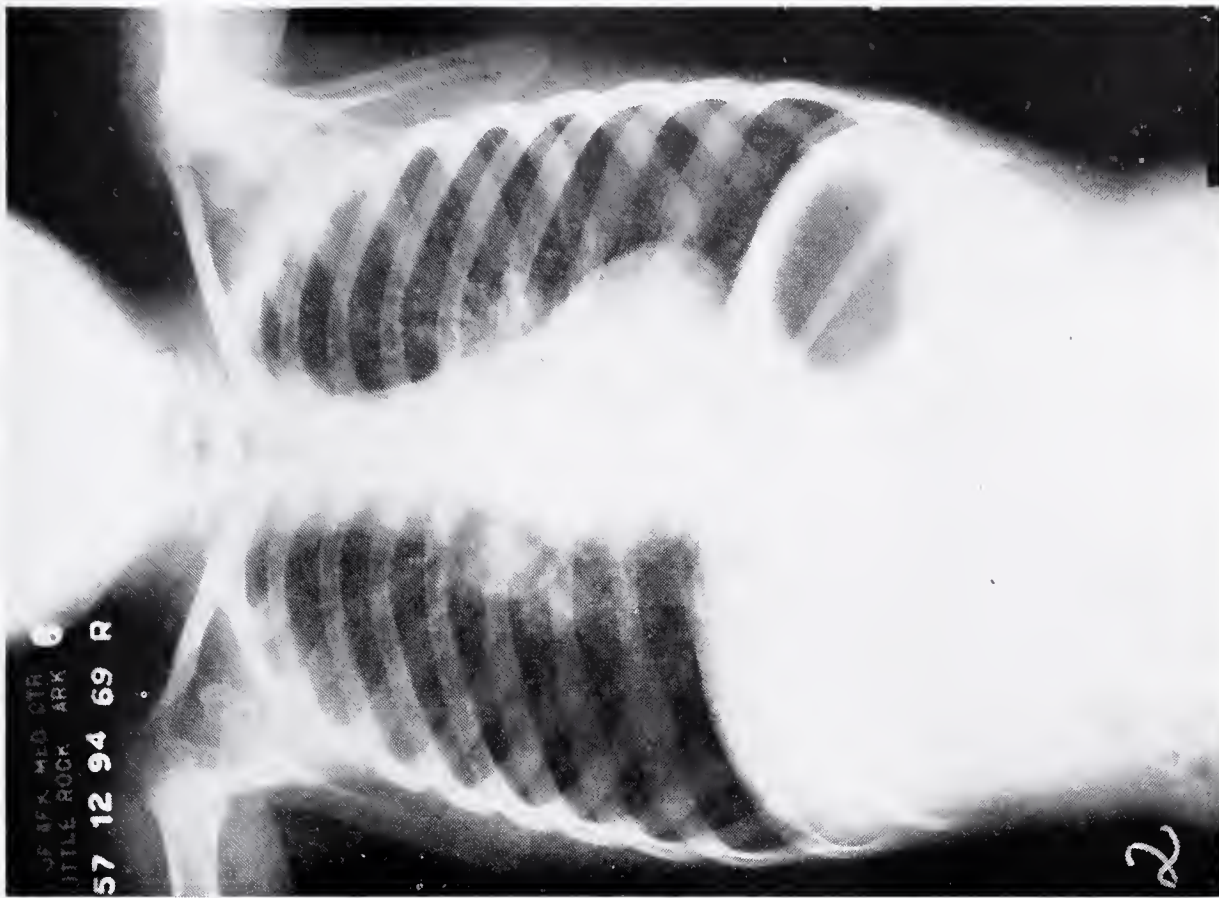
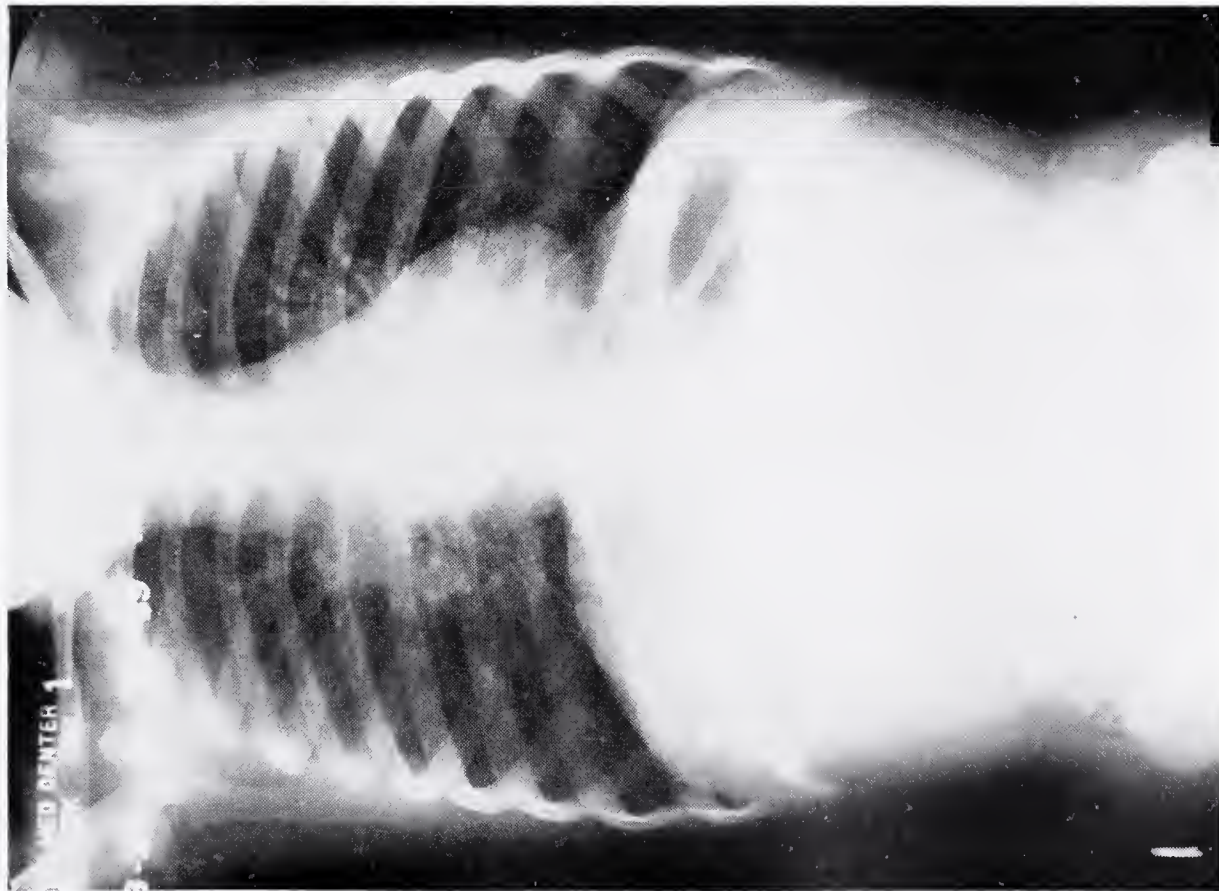
As stated earlier the quantitative urine culture method has some limitations. About 3% to 5% of the cases of active pyelonephritis will have a bacteria count below 10,000 per ml. Tuberculous and fungus infections of the kidney, because of the slow growth of these organisms, do not produce large numbers of organisms in the urine. Also, with the media suggested herein one would not isolate anerobic organisms which may be a rare

cause of pyelonephritis. However, in the great majority of cases this method is of considerable value to the clinician. With urine bacteria counts of 10,000 organisms or more per ml. there is a high probability that active infection exists and with counts below 10,000 the physician has good reason to believe that the organism cultured is a contaminant and not causing an infection. This method also permits the use of "mid stream" collection of urine samples in most instances and thereby eliminates the necessity for catheterization. These desirable features plus the simple laboratory technique it requires have made this procedure a valuable addition to the practice of clinical medicine.

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What Is Your Diagnosis?



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FOR ANSWER SEE PAGE 445

Arkansas Public Health at a Glance

A basic aim of public health is to encourage a program of health supervision by a family physician for every citizen. This is generally agreed by health authorities to be the most successful and most economical method of control of communicable disease, prevention of disability, and otherwise assuring optimal personal health standards.

Statistics recently released by the United States Department of Health, Education, and Welfare indicate there has been a slight decline in the average number of visits made to a physician by individuals during the past year. Nationally, the average person visited a physician 5.3 times during the fiscal year 1958 and only 4.7 times during fiscal 1959. Urban people visited physicians considerably more often than rural people and, of course, the age groups with the highest frequencies of visits were the very young and the very old. Urban citizens over 65 visited their physician an average of 7.0 times during 1959 for the highest frequency group, and rural people between 15 and 24 visited only 2.5 times for the lowest.

A comparison of dental visits shows an average of 1.6 per person in 1958 and 1.4 in 1959. In this area, the highest frequency is in the middle age bracket of the urban population.

The accompanying chart shows frequency of visits for various age groups by

type of residence. A visit to a physician is defined as any contact with a physician — or someone working under his direct supervision — for examination, diagnosis, treatment, or medical advice. Urban is defined as living in an incorporated place of 2,500 or more population; all others are rural nonfarm or rural.

Physician Visits per Person During the Year				
Age	All Areas	Urban	Rural Nonfarm	Rural Farm
July 1957 — June 1958				
All ages	5.3	5.6	5.2	3.9
0-4	6.4	7.0	6.1	4.5
5-14	3.9	4.3	3.8	2.6
15-24	5.0	5.2	5.0	4.1
25-44	5.2	5.4	5.1	3.9
45-64	5.6	5.8	6.0	4.2
65+	6.8	6.9	7.0	6.0
July 1958 — June 1959				
All ages	4.7	5.0	4.6	3.6
0-4	6.0	6.4	6.0	3.6
5-14	3.4	3.6	3.4	2.4
15-24	4.0	4.4	3.9	2.5
25-44	4.7	4.8	4.5	3.9
45-64	5.1	5.3	5.0	4.2
65+	6.7	7.0	6.4	5.9

PROGRAM

EIGHTY-FIFTH ANNUAL SESSION

ARKANSAS MEDICAL SOCIETY

ROBINSON AUDITORIUM AND MARION HOTEL

LITTLE ROCK, ARKANSAS

APRIL 16th, 17th, 18th and 19th, 1961

ANNOUNCEMENTS

REGISTRATION—

The registration desk will be located in the vestibule at the Garland Street Entrance to the Robinson Auditorium and will be open from 11:00 a. m. to 5:00 p.m. on Sunday, April 16th, from 9:00 a.m. to 5:00 p.m. Monday and Tuesday, and from 9:00 a.m. to noon on Wednesday.

Delegates are requested to register as early as possible, presenting credentials in proper form at the time of registration. Members and visitors are required to register, as admission to all sessions will be by badge. Bring your 1960 membership card to facilitate registration. Members of the American Medical Association from other states may register as guests.

SPECIAL TELEPHONE SERVICE will be maintained at the registration desk; phone number FRanklin 4-2074.

MEETINGS OF THE COUNCIL

The Council of the Arkansas Medical Society, including past presidents, will meet as follows:

Sunday afternoon, April 16th, 2:00 p.m., State Room, Marion Hotel

Monday, April 17th, 12:00 noon, State Room, Marion Hotel

Tuesday, April 18th, 12:00 noon, State Room, Marion Hotel

Wednesday, April 19th, 9:00 a.m., State Room, Marion Hotel

REFERENCE COMMITTEE HEARINGS

Reference committees appointed by the Speaker of the House of Delegates will hold open hearings to discuss resolutions and committee reports referred to them as follows:

Committee Number 1—Will meet Monday afternoon, April 17th, from 1:00 to 4:00 p.m. in the El Toro Room of the Hotel Marion.

H. W. Thomas, Dermott, Chairman; L. E. Drewery, Camden, Joseph A. Buchman, Little Rock

Committee Number 2—Will meet Monday morning, April 17th, from 9:00 to 11:30 a.m. in the El Toro Room of the Hotel Marion.

Louis K. Hundley, Pine Bluff, Chairman; J. W. Kennedy, Arkadelphia; Bill D. Stewart, Little Rock

ELECTION TO FILL VACANCY ON THE ARKANSAS STATE MEDICAL BOARD

A vacancy occurs in the Second Congressional District, the counties of which are listed below. All members from these counties are eligible to attend the meeting and vote for nominees. Please meet in the Parlor "A", Marion Hotel, immediately following the House of Delegates meeting on Sunday, April 16th. Counties of the Second Congressional district are:

Cleburne, Fulton, Independence, Izard, Jackson, Lawrence, Monroe, Prairie, Randolph, Sharp, Stone, White, and Woodruff.

PRESENT MEMBER: Dr. Hugh R. Edwards, Searcy, who is eligible for reappointment.

PAST PRESIDENTS BREAKFAST

The past president's breakfast will be held in the Rendezvous Room of the Marion Hotel at 7:30 a.m. on Wednesday, April 19th.

FIFTY YEAR CLUB BREAKFAST

A breakfast for members of the Fifty Year Club of the Arkansas Medical Society will be held in the Rendezvous Room of the Marion Hotel, at 7:30 a. m. on Tuesday, April 18th. Members are requested to contact Dr. J. H. McCurry, Fifty Year Club Secretary, at the Marion Hotel before 7:00 p.m. on Monday.

A YEARLY P. E. FOR EVERY M.D.

The Arkansas Academy of General Practice, Arkansas Heart Association, Arkansas Tuberculosis Association, and the Ophthalmology Section of the Arkansas Medical Society will again co-sponsor the "yearly P.E. for every M.D." A physical examination—including EKG; check x-ray; intra-ocular tension; blood pressure; urine, albumen, sugar and microscopic; blood, hb, WBC, Wassermann—will be offered to every physician. The exams will be held in the area to the left of the entrance to the exhibit hall.

SCIENTIFIC EXHIBITS

Scientific exhibits have been arranged in the Exhibit Hall of the Robinson Auditorium. You will be interested in seeing these displays by Arkansas and out-of-state physicians.

COMMERCIAL EXHIBITS

Robinson Auditorium, Monday through Wednesday

The Commercial exhibits display the products and services of well-known and reputable firms. Their presence here represents an important financial contribution to our annual session. You are urged to visit each booth and register with the representatives in attendance.

TOUR OF RESEARCH CENTER, UNIVERSITY OF ARKANSAS

A tour of the new Research Center at the University of Arkansas Medical Center has been scheduled for 2:00 to 4:00 p.m. on Tuesday afternoon, April 18th. Demonstrations will be a part of the tour.

REUNION — CLASS OF 1951

A Tenth Year Reunion of the Class of 1951, University of Arkansas School of Medicine, will be held at the Cimarron Club, beginning at 6:15 p.m. on Monday, April 17th. There will be a cocktail party, dinner and dancing.

REUNION — CLASS OF 1936

The 1936 graduating class of the University of Arkansas Medical School will hold a reunion on Monday evening, April 17th, at the Marion Hotel.

GOLF TOURNAMENT

The annual golf tournament will be played at the Riverdale Country Club on Monday and Tuesday, April 17th and 18th. Green fee: \$2.50. Register with club pro at Pro Shop. The club will be closed on Monday with exception of locker rooms, which will remain open. First three prizes will be awarded at the annual banquet Tuesday evening. Dr. Gordon Oates of Little Rock is chairman of the tournament.

HOUSE OF DELEGATES

Sunday, April 16th, 1961, 4:30 p.m.

Lecture Hall, Robinson Auditorium

Order of business:

Call to order

Roll call of delegates

Report of Credentials Committee

Introduction of Guests

Adoption of minutes of the 84th Annual Session

Report of the Council

Report of Committees

New business

Selection of Nominating Committee

Adjournment

FIRST GENERAL SESSION

Monday, April 17th, 1961, 9:00 a.m.

Lecture Hall, Robinson Auditorium

A.M.

9:00

FILM

"Emergency Surgery of the Acutely Injured"

VISIT EXHIBITS

10:00

Scientific Session

Walter H. O'Neal presiding

10:00

"Acute Injuries of the Hand," Daniel Riordan, New Orleans

10:30

"The Diagnosis of Strabismus", James Miller, St. Louis, Missouri

Dr. Miller is assistant director of the Department of Ophthalmology, Washington University School of Medicine, St. Louis, a position he has held since 1958. From 1956 until the present he has served as director of a Motility Clinic in St. Louis. He received a B.S. degree from Tulane University and was graduated from the Medical College of Alabama. His residency in Ophthalmology was at Barnes Hospital. He was selected for the Heed Fellowship in 1956. Dr. Miller served in the United States Navy 1950-1952.

- 11:00 "Medical Malpractice — Present Trends," Carl Wasmuth,
Cleveland, Ohio



Dr. Carl Wasmuth

Dr. Wasmuth received his M.D. degree from the University of Pittsburgh. He is also a graduate of the Cleveland-Marshall Law School and is a member of the Ohio Bar. Doctor Wasmuth is staff anesthesiologist at the Cleveland Clinic and is assistant professor in Legal Medicine and Director of the Department of Medical-Legal Affairs, Cleveland-Marshall Law School. He has recently completed writing a book entitled "LAW AND ANESTHESIA".

- 11:30 President's Address: Dr. J. J. Monfort, Batesville, Arkansas
Invocation: Dr. Richard Hardie, Westover Hills Presbyterian Church, Little Rock

SECOND GENERAL SESSION

Monday, April 17th, 1961, 2:00 p.m.

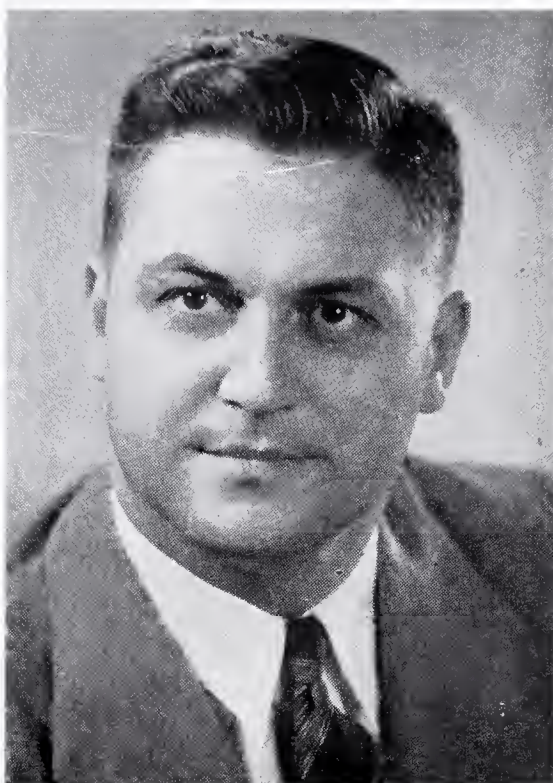
Lecture Hall, Robinson Auditorium

Kenneth R. Duzan, Second Vice President, presiding

P.M.

- 2:00 "The Place of Radical Neck Dissection in the Treatment of Lip and Intra-oral Carcinomas," O. H. Beahrs, Rochester, Minnesota.
- 2:30 "Diagnosis and Treatment of Renal Hypertension," Eugene F. Poutasse, Cleveland, Ohio
- 3:00 INTERMISSION—VISIT EXHIBITS
- 3:20 "Medical Complications of Pregnancy," Stewart Fish, Dallas, Texas
- 3:50 "Common Sense in the Diagnostic Use of X-Ray," J. E. Miller, Dallas, Texas

Dr. Beahrs received the degree of bachelor of arts from the University of California and that of doctor of medicine from Northwestern University. He received the degree of master of science in surgery from the University of Minnesota. Dr. Beahrs interned in the Evanston Hospital, Evanston, Illinois, and became a fellow in surgery in the Mayo Foundation. He left Mayo to enter the United States Naval Reserve. After three years, he returned to Mayo to complete his fellowship and become a first assistant in surgery. In 1950, he was appointed to the permanent staff as head of a section of surgery. He was made instructor in surgery in the Mayo Foundation, Graduate School, University of Minnesota, in 1951, was advanced to assistant professor in 1954 and to associate professor in 1959. In 1959 he became a member of the Board of Governors of the Mayo Clinic.



Dr. O. H. Beahrs



Dr. Eugene F. Poutasse

Dr. Poutasse received B.S. and M.D. degrees from Harvard. His internship at Peter Bent Brigham Hospital was interrupted by military service. After completing the internship, he served a residency at the same hospital. Dr. Poutasse entered a fellowship in Urology at the Cleveland Clinic and a year later returned to Peter Bent Brigham Hospital as assistant in surgery and resident in urological surgery. In 1952 he was made staff urologist, Cleveland Clinic Foundation and Frank E. Bunts Institute.

Dr. Fish obtained his preliminary education in Virginia and received an M.D. degree from the University of Pennsylvania in 1949. He served a rotating internship at the University of Pennsylvania Hospital. Dr. Fish was assistant resident in obstetrics and gynecology at Sloane Hospital for Women at the Columbia-Presbyterian Medical Center 1950-53, and was chief resident in Gynecology at the Free Home for Women for six months. Dr. Fish was assistant professor of the Department of Obstetrics and Gynecology at Southwestern Medical School of the University of Texas from 1954 until 1956 and was acting head of the same department from May until September of 1955. In 1956, Dr. Fish entered private practice and became clinical assistant professor of the Obstetrics-Gynecology Department at Southwestern.



Stewart A. Fish



Dr. J. E. Miller

Dr. Miller received a B.A. degree from St. Mary's University in San Antonio and the degree of doctor of medicine from Baylor University College of Medicine, Dallas. He served an internship at Robert B. Green Memorial Hospital in San Antonio and a residency in Radiology at Cleveland City Hospital. After a tour of military duty, he was appointed radiologist at Parkland Hospital in Dallas and Consultant in Radiology at Veterans Administration hospitals in Lisbon and McKinney, Texas. He is currently radiologist at the Children's Medical Center and Baylor University Medical Center, Dallas, and is Clinical Professor of Radiology at Southwestern Medical School of the University of Texas, Dallas.

ARKANSAS MEDICAL SOCIETY MEETING, APRIL 16-17-18-19, 1961

MONDAY EVENING, APRIL 17th, 1961

6:00-7:30 Cocktail Party

7:30-9:00 Buffet Dinner

GRAND BALLROOM—HOTEL MARION

Surprise Entertainment

FINAL GENERAL SESSION

Tuesday, April 18th, 1961, 9:30 a.m.

Lecture Hall, Robinson Auditorium

M. E. Blanton, Third Vice President, presiding

A.M.

9:30

FILM

"Just Four Minutes"

10:00

"Regurgitant Esophagitis," H. W. Schmidt, Rochester,
Minnesota

10:30

"The Problem of Staphylococcal Infections," Margaret H. D.
Smith, Department of Pediatrics, Tulane University
School of Medicine, New Orleans, Louisiana

11:00

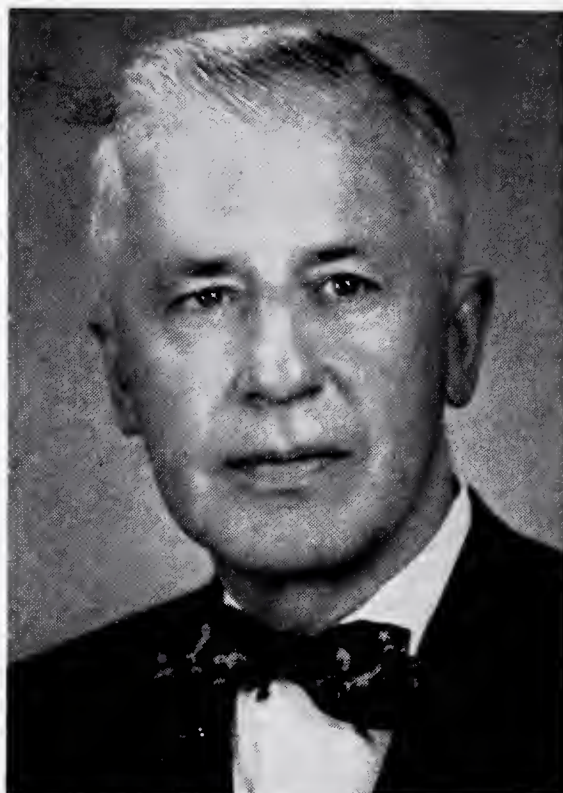
INTERMISSION—VISIT EXHIBITS



Margaret H. D. Smith

Dr. Smith studied in Switzerland and Germany prior to receiving an M.D. degree from Johns Hopkins in 1939. She interned in Pediatrics at Baltimore City Hospital and Johns Hopkins Hospital, then served a residency in pediatrics and communicable diseases at the University Hospital in Ann Arbor, Michigan. She was medical director of Sydenham Hospital for communicable diseases for several years and was also instructor in pediatrics at Johns Hopkins. Dr. Smith was on the staff at Tulane Medical School from 1948 through 1955, when she became associate professor of Pediatrics at New York University College of Medicine. In 1960 she returned to Tulane and is currently associate professor of pediatrics.

Dr. Schmidt was born in Red Wing, Minnesota, and received his education in Minnesota—receiving the degree of B.A. from St. Olaf College, Northfield, Minnesota, of M.D. from the University of Minnesota, and of M.S. in Medicine from the University of Minnesota. He served his internship at the Minneapolis General Hospital and was a fellow in the Mayo Foundation of the University of Minnesota. In 1936 he became a member of the staff of the Mayo Clinic as consultant in the section of thoracic diseases. He is Professor of Medicine in the Mayo Foundation of the University of Minnesota. He served in the Army Medical Corps from 1943 until 1946, his services including one year in New Guinea and one year in Fitzsimons General Hospital in Denver, Colorado, where he was chief of the Endoscopic Service.



Dr. H. W. Schmidt

- 11:20 **MEMORIAL SERVICE**—Lecture Hall, Robinson Auditorium
J. J. Monfort, President, presiding
Invocation: The Reverend Kenneth Shamblin, Pulaski Heights Methodist Church, Little Rock
Reading of the names of the deceased members of the Auxiliary by Mrs. C. C. Long, President of the Auxiliary
Reading of names of deceased members of the Society by Dr. Monfort, president of the Society
Memorial Address: Dr. Joe Reid, Arkadelphia
“The Lord’s Prayer” by Malotte—Mrs. Paul Gray, Batesville
Accompanist: John Glenn Metcalf, Organist and Choirmaster, Trinity Episcopal Cathedral, Little Rock
Benediction: The Reverend Kenneth Shamblin

TUESDAY, APRIL 18th, 1961

SPECIALTY SECTION MEETINGS

(There is no General Session scheduled for Tuesday Afternoon)

EYE, EAR, NOSE AND THROAT

The Eye, Ear, Nose and Throat Section will meet in the Hotel Marion beginning at 9:30 a.m. on Tuesday. The program is as follows:

A.M.

- 9:30 President’s Address—Dr. M. E. Blanton, Jonesboro, Arkansas
10:00 “The A and V Syndromes”—Dr. James Miller, Washington University School of Medicine, St. Louis, Missouri

ARKANSAS MEDICAL SOCIETY MEETING, APRIL 16-17-18-19, 1961

- 11:00 "Recent Advances in Treatment of Retinal Detachment"—
Dr. Merrill Grayson, University of Arkansas School of
Medicine, Little Rock
- 11:30 "Unilateral Ex-ophthalmous"—Dr. Jack Bailey, University
of Arkansas School of Medicine, Little Rock

P.M.

12:00 to 1:30 Luncheon and Business Session

- 1:30 "The Pedicle Skin Graft for Reconstruction of the Eardrum"—
—Dr. Houston L. Bell, Gill Memorial Eye, Ear and
Throat Hospital, Roanoke, Virginia
- 2:30 "Vein Graft Technique for Closing Eardrum Perforation"—
Dr. H. A. (Ted) Bailey, Little Rock, Arkansas
- 3:00 "General Concepts and Case Presentation of Intra-ocular
Foreign Bodies"—Dr. Ronald Bracken, University of
Arkansas School of Medicine, Little Rock, Arkansas

ANESTHESIOLOGY

The Anesthesiologists will meet for a scientific session in the Marion Hotel beginning at 2:00 p.m. on Tuesday. Dr. Carl Wasmuth of Cleveland, Ohio, will discuss "The Legal Relationship of the Hospital, the Anesthesiologist, and the Resident."

OBSTETRICS AND GYNECOLOGY

The Obstetrics and Gynecology Section will meet in the Marion Hotel on Tuesday, beginning with a luncheon at 12:30. Following the luncheon, there will be a scientific session with Dr. Stewart Fish of Dallas, Texas, as speaker. Dr. Fish will talk on "Vulvar Lesions".

PEDIATRICS

The Pediatric Section will meet in the Marion Hotel on Tuesday as follows:

P.M.

- 12:00-1:30 Luncheon
- 2:00 "Complications Arising in Children Under Treatment for
Tuberculosis," Dr. Margaret H. D. Smith
- 2:45 "The Newly Recognized Role of Milk Allergy in the Etiology
of Chronic and/or Recurrent Respiratory Disease," Dr. W. T.
Kniker
- 3:15 Intermission
- 3:30 "Problems of the Immediate Newborn Period," Dr. Alice G.
Beard
- 4:00 "Antimicrobial Prophylaxis: Uses and Abuses," Dr. W. T.
Dungan
- 4:30 Question and Answer Period

GENERAL PRACTICE

The Arkansas Academy of General Practice will meet in the Marion Hotel on Tuesday for a luncheon, followed by a scientific session. Dr. Alex J. Steigman will be guest speaker and will discuss "Physical Examination of the Young" and "Diagnosis of Infectious Diseases in Childhood."



*attains
sustains
retains*

*extra
antibiotic
activity*

DECL

attains activity
levels promptly

DECLOMYCIN Demethylchlortetracycline attains — usually within two hours—blood levels more than adequate to suppress susceptible pathogens—on daily dosages substantially lower than those required to elicit antibiotic activity of comparable intensity with other tetracyclines. The average, effective, adult daily dose of other tetracyclines is 1 Gm. With DECLOMYCIN, it is only 600 mg.

sustains activity
levels evenly

DECLOMYCIN Demethylchlortetracycline sustains through the entire therapeutic course, the high activity levels needed to control the primary infection and to check secondary infection at the original—or another—site. This combined action is usually sustained without the pronounced hour-to-hour, dose-to-dose, peak-and-valley fluctuations which characterize other tetracyclines.

TETRACYCLINE
ACTIVITY
WITH
DECLOMYCIN
THERAPY

DOSAGE
150 mg. q.i.d.

TETRACYCLINE
ACTIVITY
WITH OTHER
TETRACYCLINE
THERAPY

DOSAGE
250 mg. q.i.d.

POSITIVE ANTIBACTERIAL ACTION

DECLOMYCIN—SUSTAINED ACTIVITY LEVELS

OTHER TETRACYCLINES—PEAKS AND VALLEYS

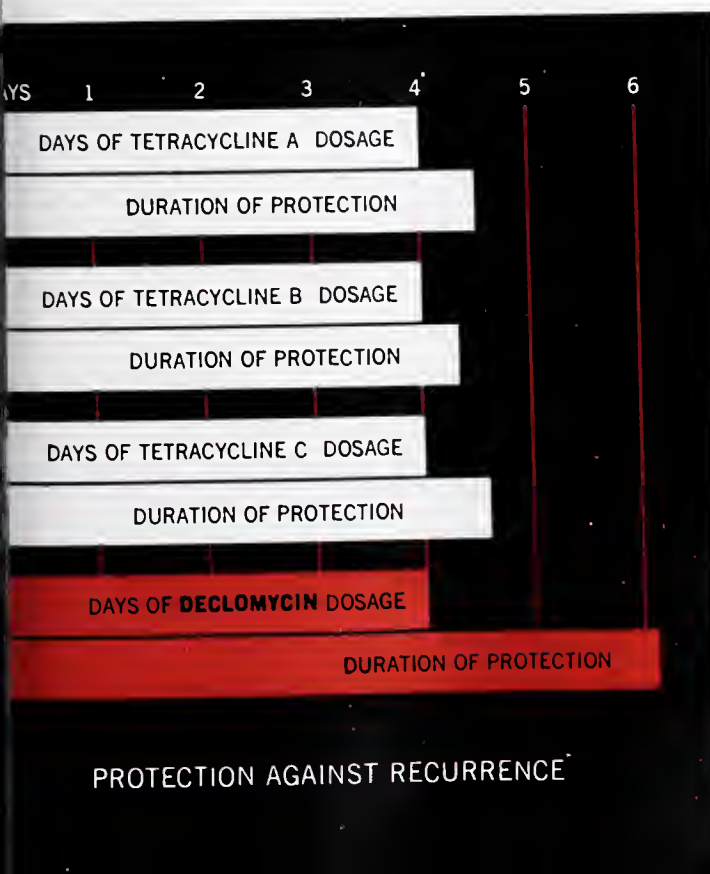
PROTECTION AGAINST PROBLEM PATHOGENS

DECLOMYCIN[®]

DEMETHYLCHLORTETRACYCLINE LEDERLE

retains activity
levels 24-48 hrs.

DECLOMYCIN Demethylchlortetracycline retains activity levels up to 48 hours after the last dose is given. At least a full, extra day of positive action may thus be confidently expected. The average, daily adult dosage for the average infection—1 capsule q.i.d.—is the same as with other tetracyclines...but **total** dosage is lower and duration of action is longer.



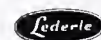
CAPSULES, 150 mg., bottles of 16 and 100. **Dosage:** Average infections—1 capsule four times daily. Severe infections—Initial dose of 2 capsules, then 1 capsule every six hours.

PEDIATRIC DROPS, 60 mg./cc. in 10 cc. bottle with calibrated, plastic dropper. **Dosage:** 1 to 2 drops (3 to 6 mg.) per pound body weight per day—divided into 4 doses.

SYRUP, 75 mg./5 cc. teaspoonful (cherry-flavored), bottles of 2 and 16 fl. oz. **Dosage:** 3 to 6 mg. per pound body weight per day—divided into 4 doses.

PRECAUTIONS—As with other antibiotics, DECLOMYCIN may occasionally give rise to glossitis, stomatitis, proctitis, nausea, diarrhea, vaginitis or dermatitis. A photodynamic reaction to sunlight has been observed in a few patients on DECLOMYCIN. Although reversible by discontinuing therapy, patients should avoid exposure to intense sunlight. If adverse reaction or idiosyncrasy occurs, discontinue medication.

Overgrowth of nonsusceptible organisms is a possibility with DECLOMYCIN, as with other antibiotics. The patient should be kept under constant observation.



LEDERLE LABORATORIES
A Division of
AMERICAN CYANAMID COMPANY
Pearl River, New York

Dr. Steigman, a native of Pennsylvania, was educated at Temple University School of Medicine. Following his graduation in 1938 his training has been primarily in the field of pediatrics and research in viral diseases. Dr. Steigman has been chairman of the Department of Pediatrics, University of Louisville, since 1954.



Dr. Alex J. Steigman

This program is made possible by a grant of funds by Mead Johnson and Company. Attendance will be acceptable for two hours of Category 1 credit by the American Academy of General Practice.

UROLOGY

The Section on Urology will meet for luncheon at 12:00 noon in the Marion Hotel on Tuesday. During the luncheon, there will be a business meeting with election of officers. The scientific program will consist of a talk on "The Technique of Aortography" by Dr. Eugene F. Poutasse of Cleveland, Ohio, and a Pyelogram Session moderated by Dr. Poutasse. Urologists and guests will present interesting cases.

RADIOLOGY

The Radiologists will meet on Tuesday in the Marion Hotel, beginning with a luncheon and business meeting at 12:30 p.m. Following the luncheon, Dr. J. E. Miller will talk on "Recent Advances in Angiology" and there will be a film-reading session moderated by Dr. Howard Barnhard of Little Rock.

SURGERY

The Little Rock Academy of Surgery will meet at the Top of the Rock Club in the Tower Building on Tuesday, beginning with a luncheon at 12:30 p.m. Dr. O. H. Beahrs of Rochester, Minnesota, will talk on "Teratoid Tumors."

INTERNAL MEDICINE

The Arkansas Society of Internal Medicine will meet in the Hotel Marion on Tuesday, beginning at 12:15 p.m. From 12:15 to 1:30 p.m. there will be a luncheon and business meeting for members of the Arkansas

Society of Internal Medicine. All physicians are invited to attend the Society's scientific session beginning at 2:00 p.m. The program is as follows:

- 2:00 p.m. "The Clinical Significance of Dysphagia," Dr. H. W. Schmidt, Mayo Clinic, Rochester, Minnesota
- 2:15 p.m. Intermission
- 3:00 p.m. "Therapy of Lung Abscess," Dr. Robert S. Abernathy, University of Arkansas Medical Center, Little Rock
- 3:30 p.m. "Familial Jaundice," Dr. Kerrison Juniper, Jr., University of Arkansas Medical Center, Little Rock

DERMATOLOGY

The Arkansas Dermatologic Society will meet at 9:00 a.m. on April 16th at the University of Arkansas Medical Center, Little Rock, Arkansas, for its annual clinical session at which a number of interesting clinical cases will be presented and discussed. This will be followed by a luncheon for all attending. Doctor Ray Noojin of Birmingham, Alabama will be the special guest of the society and will present a topic of general interest following the luncheon.

TOUR OF RESEARCH CENTER

UNIVERSITY OF ARKANSAS MEDICAL CENTER

Tuesday Afternoon, April 18th

2:00 to 4:00 p.m.

DEMONSTRATIONS

TUESDAY NIGHT

APRIL 18th, 1961

INSTALLATION BANQUET AND DANCE

BALLROOM, HOTEL MARION

J. J. Monfort, President

Invocation: Dr. Walter H. O'Neal

Awarding of First Three Golf Prizes

Installation of New President

Entertainment

FINAL SESSION, HOUSE OF DELEGATES

WEDNESDAY, APRIL 19th, 1961

10:00 A.M.

Lecture Hall, Robinson Auditorium

ORDER OF BUSINESS:

Roll Call

Report of Nominating Committee

Election of Officers

Report of Reference Committees

Supplementary Report of the Council
Report of Committees
New Business
Selection of time and place of 1963 meeting
Adjournment

COUNCIL MEETING

The new Council will convene for a brief reorganizational meeting immediately following adjournment of the Final Session of the House of Delegates.

COMMERCIAL EXHIBITORS

The business firms who purchase exhibit space at our annual session contribute a great deal to the financing as well as to the educational aspects of the meeting. The number of visits to the commercial exhibits are the only criteria by which these companies can judge the value they receive from the investment in booth rental, displays and employee's time. You will be rewarded for the time you spend visiting the following exhibits:

COMMERCIAL EXHIBITORS

KELEKET X-RAY COMPANY OF ARKANSAS

We plan to feature "DIAPULSE", a new Bio-Electrical Modality for the safe treatment of the entire patient through the Host Defense Mechanism and the RETICULOENDOTHELIAL Cell System. A pulsed High Frequency Therapy, without Pyrexia, stimulates the R.E.S. and Host Defense Mechanism thus increasing the antibody formation thru the treatment of acute, chronic Bacterial or Virus Infections. Erdman measured a 175 percent blood flow and Bach learned that this form of energy increased efficiency of human gamma globulin. Hellers demonstrated a pearl chain effect on blood cells with Diapulse.

CENTRAL SURGICAL COMPANY, INC.

We plan to feature HYPO, finest quality hypodermic syringes, needles and clinical thermometers, unsurpassed for dependability for both quality and price. Savings as much as $\frac{1}{3}$ can be accomplished on the next 12 months purchases, ordered as needed. Interchangeable glass, metal, luer-lock tips, standard glass, metal, luer-lock and eccentric tip syringes. Standard luer-lock needles are available in all hypodermic sizes and gauges as well as disposable needles. The Hypo Sterile Disposable Syringe and needle is now in use throughout the world. Complete Satisfaction guaranteed.

DICK X-RAY COMPANY

The Dick X-Ray Company will exhibit and demonstrate the latest type of Cambridge EKG unit, also, the new Dallons line of Ultra-Sonic equipment and the Dallons EKG and Operating Room Cardioscopic. They will also show the newest and most modern of X-Ray accessories.

D. A. SPARKS, INC.

The D. A. Sparks Agency will display and demonstrate the Thermo-Fax business machine that copies, makes statements of account, laminates, makes transparencies, labels, offset masters and does more jobs than any other office machine; the beautiful Raphael model Underwood Olivetti electric typewriter with proportionate spacing; and the Olivetti line of portable typewriters. Many doctors are using the Thermo-Fax to send statement to their patients.

G. D. SEARLE AND COMPANY

You are cordially invited to visit the Searle booth where our representatives will be happy to answer any questions regarding Searle Products of Research. Featured will be our new products — ALDACTAZIDE, LOMOTIL, and ENOVID.

WINTHROP LABORATORIES

Winthrop Laboratories cordially invites you to visit their booth at which we are planning to feature the following product: ALVODINE, new potent narcotic analgesic that relieves pain without causing drowsiness or hypnosis (in over 90 percent of patients). Especially well suited for postoperative use, for pain from cancer, angina, cholecystitis, pleurisy, myocardial infarction; also for preoperative preparation and as a supplement to anesthesia. Alvodine is highly effective orally as well as parenterally. Alvodine is available in scored tablets of 50 mg. and ampules of 20 mg. (1cc), subject to Federal Narcotic Law.

A. S. ALOE AND COMPANY

In the Aloe booth, see 2nd century, a fresh original concept in professional furniture combining major advances in function, durability and beauty. Unique Vyn-Steel finish is a permanent laminate of virtually indestructible vinyl to steel. Choose from a brilliant galaxy of eight striking color combinations. Other Aloe specialties and new items are also displayed.

THE COCA-COLA COMPANY

Ice-cold Coca-Cola served through the courtesy and cooperation of the Coca-Cola Bottling Company of Arkansas, Little Rock, Arkansas, and The Coca-Cola Company.

CIBA PHARMACEUTICAL PRODUCTS, INC.

We will feature FORHISTAL (R)—a new, low-dosage antiallergic and antipruritic agent. Clinically, FORHISTAL has proved highly effective in a wide range of allergic and pruritic disorders. It is well tolerated by patients of all ages. FORHISTAL is available in 4 forms of issue: Lontabs (R), Tablets, Syrup and Pediatric Drops.

E. R. SQUIBB AND SONS

UNITED STATES VITAMIN CORPORATION

On display — ARLIDIN, the safe vasodilator drug with three unique pharmacologic actions: (1) dilates predominantly small blood vessels of skeletal muscle, (2) increases cardiac output without significant increase in pulse rate, (3) promotes greater circulating blood volume. Thus, ARLIDIN (Nylidrin HCl. NNR) is indicated in treating intermittent claudication in arteriosclerosis obliterans, thromboangiitis obliterans, and diabetic vascular disease; also effective in Raynaud's Syndrome and ischemic ulcers.

ABBOTT LABORATORIES

Abbott Laboratories invites you to visit our exhibit. Our representatives will be happy to answer any questions you may have concerning our leading products and new developments.

WM. T. STOVER COMPANY, INC.

In the Wm. T. Stover Company booth one may view many new items proudly displayed. More proudly displayed will be the old faces of your old Stover friends. In addition to the many surgical items, make sure to see the Stover Scientific Laboratory Division display. Also shown is the most modern X-ray unit on the market today: The Picker "Anatomic."

PFIZER LABORATORIES

Pfizer Service Representatives from Pfizer Laboratories will be pleased to have you in attendance at their booth to discuss the latest products of Pfizer research.

LITTLE ROCK BLUE PRINT COMPANY

How 80% of statement billing time can be saved by reproducing statement directly from ledger-cards will be demonstrated with a desktop Bruning Copyflex machine. Statements made in seconds on white (or colored) letterweight paper for 1½ cents each. Transcription from ledger card to separate statement form eliminated and patient receives accurate, itemized statement.

DOHO CHEMICAL CORPORATION

Doho Chemical Corporation is pleased to exhibit: AURALGAN — Ear medication for relief of pain in Otitis Media; also removal of Cerumen; RHINALGAN, nasal decongestant free from systemic or circulatory effect. Safe for infants — aged. OTOSMOSAN, non-toxic fungicide-bactericide (gram negative-gram positive) for suppurative and aural dermatomycotic ears; LARYLGAN, soothing throat spray and gargle for infections and noninfectious sore throat involvements. BIOTOSMOSAN HC, the solution to the "Problem Ear." Antimicrobial, Anti-inflammatory, De-inflammatory, Anti-allergic, antipruritic.

WARNER-CHILCOTT LABORATORIES

Featured will be GELUSIL — the physician's antacid — for the relief of gastric hyperacidity and management of peptic ulcer. Provides two protective coating gels for prompt, prolonged relief of pain. Gelusil is all antacid in action—is non-constipating, contains no laxative. PERITRATE — A long-acting coronary vasodilator for patients with coronary artery disease — whether angina pectoris or coronary occlusion. Peritrate improves coronary blood flow, thereby increasing collateral circulation, with no significant change in blood pressure or pulse rate. Smooth onset of action virtually eliminates nitrate headache.

MERRILL, LYNCH, PIERCE, FENNER AND SMITH

Our booth will be staffed with two experienced Account Executives from our Little Rock office who will be available to answer any questions concerning investments and the securities business. We will have available free printed information about the securities business plus stock comments and appraisals on most of the more widely held companies.

MEDCO PRODUCTS COMPANY, INC.

Presenting the MEDCO-SONLATOR. Providing a new concept in therapy by combining muscle stimulation and ultra sound simultaneously through a SINGLE Three-Way Sound Applicator. The MEDCO-SONLATOR is a distinct advance in the effectiveness of physical therapy in your office or hospital. A few minutes spent in our booth should prove of value to your practice.

ELI LILLY AND COMPANY

You are cordially invited to visit the Lilly exhibit located in Space Number 24. The Lilly sales people in attendance welcome your questions about Lilly products and recent therapeutic developments.

JULIUS SCHMID, INC.

An interesting and informative exhibit featuring IMMOLIN Vaginal Cream-Jel for use without a diaphragm; RAMSES Flexible Cushioned and BENDEX Diaphragms; RAMSES Vaginal Jelly; VAGISEC Jelly and Liquid for vaginal trichomoniasis therapy; and XXXX (Fourex) Skin Condoms, RAMSES, SHEIK and ESQUIRE Rubber Condoms for the control of trichomonal re-infections.

THE S. E. MASSENGILL COMPANY

Best wishes from Massengill to the Arkansas Medical Society for a most successful 1961 convention! Massengill representatives will be honored to discuss any products of interest to you. On display will be TRIMAGILL, the outstanding new product for vaginal therapy; MASSENGILL POWDER, the preferred vaginal douche; ADRENOSEM, the unique systemic hemostat; OBEDRIN, superior reducing aid; HOMAGENETS, the only solid homogenized vitamins; LIVITAMIN, the hematinic of choice and products of the SALCORT-PREDSEM GROUP for the complete range of arthritic therapy. Of course, literature and samples will be available should you desire them.

SANDOZ PHARMACEUTICALS

Sandoz pharmaceuticals cordially invites you to visit our display at booth 29. MELLARIL—The first potent tranquilizer with a selective action (i.e.—no action on vomiting centers). This unique action gives specific psychic relaxation with safety at all dosage levels. CAFERGOT PB—The most effective oral medication for the relief of migraine headache with G.I. disturbance accompanied by tension. SYNTOCINON NASAL SPRAY—New-Syntocinon Nasal Spray for intranasal application of synthetic oxytocin (Syntocinon). Activates the milk-ejection reflex to stimulate milk let-down. Overcomes some of the complications associated with lactation e.g. engorged, painful, tender or distended breasts due to milk retention and stasis or the circumscribed, painful induration of incipient mastitis. Accelerates involution of the uterus.

DABBS-SULLIVAN COMPANY

Mr. Melvin Spear, Account Executive with Dabbs Sullivan Company, will exhibit pamphlets and brochures regarding investment securities. Included in his exhibits are Mutual Fund Prospectus and associated literature. Of unusual interest is a solar motor-exemplifying power derived from the sun's energy. Mr. Spear is available to answer any of your questions.

PARKE, DAVIS AND COMPANY

Medical service members of our staff will be in attendance at our booth to discuss important Parke-Davis specialties which will be on display.

SCHERING CORPORATION

You are cordially invited to visit the Schering Technical exhibit where the following products will be featured: Chlor-Trimeton, unsurpassed antihistamine; Diloderm, first chlorinated steroid with specific topical effectiveness; Naqua, effective oral diuretic — and anti-hypertensive.



A. H. ROBINS COMPANY, INC.

Ask the Robins representatives about DIME-TANE, the antihistamine with unsurpassed potency and placebo-like side effects, and ENTZYME and Donnazyme, the digestants proved especially suitable for your gallbladder or "nervous indigestion" patients, respectively. They will also be happy to discuss time-tested DON-

NATAL (anti-spasmodic-sedative) and ALLBEE WITH C (high potency B and C vitamins) or other Robins products.

WALLACE LABORATORIES

The representatives of Wallace Laboratories will be glad to discuss SOMA and Miltown at booth 38. SOMA is a new non-hormonal agent for the relief of chronic and traumatic pain and stiffness in muscles and joints, and is also useful in some neurological conditions. Side effects are limited to some sleepiness. MILTOWN, is a proven tranquilizer for relieving anxiety and tension states. MILTOWN is available in 200 mg. and 400 mg. dosage strengths.

J. A. MAJORS AND COMPANY

The latest publications of W. B. Saunders Company will be on display for your examination: Edwards, AN ATLAS OF ACQUIRED HEART DISEASES; Artz & Hardy, SURGICAL COMPLICATIONS AND THEIR MANAGEMENT; Roberts, DIFFICULT DIAGNOSIS; Williamson, OFFICE DIAGNOSIS; 1961 CURRENT THERAPY; Beckman, PHARMACOLOGY; Guyton, PHYSIOLOGY; and many others.

V. MUELLER AND COMPANY

You are invited to spend as much of your time as possible browsing through our display of instruments for the latest techniques. We especially want to show you our Signature line of hemostats and other ring handle forceps. Mr. Joe Hogan of Little Rock will be in charge of our booth.

MERCK SHARP AND DOHME

"LYOVAC" "THROMBOLYSIN" fibrinolysin (human) for use to promote the dissolution of certain intravascular thrombi is featured.

"STRIATRAN", effective in relieving the anxiety and tension associated with a variety of clinical situations, and "DECADRON", for symptomatic treatment in patients with allergic and inflammatory disorders, are also of interest. Technically trained personnel will be present to discuss these and other subjects of clinical interest.

ROCHE LABORATORIES

Roche Laboratories will feature LIBRIUM—a therapeutic agent for superior, safer, faster control of nervousness, anxiety, tension and other common emotional disturbances without the dulling effect of depressant action of the tranquilizers; TIGAN—a specific antiemetic agent effective both prophylactically and therapeutically against most clinically significant types of nausea and vomiting.

HERBERT COX CORRECT SHOES

Herbert Cox Shoes, Inc., Little Rock firm, specializing in shoes for therapeutic purposes and known for its strong adherence to medical standards, will show an exhibit of certain important details in shoe construction of significance for medical use. The booth will be staffed by a senior executive of the Herbert Cox organization.

GEIGY PHARMACEUTICALS

Geigy cordially invites members and guests of the Association to its display booths. The newest technics relating to bowel hygiene in addition to more recent developments in therapy of cardio-vascular, metabolic and psychiatric disorders may be discussed with physicians and representatives in attendance.

KAY SURGICAL COMPANY, INC.

We will be pleased to display a variety of equipment items most interesting to the physician. Our booth will be staffed by our representatives, Mr. Frank Miros of Fort Smith, Arkansas, and Mr. Van Oliver of El Dorado, Arkansas.

MEAD JOHNSON AND COMPANY

The Mead Johnson exhibit has been arranged to give you the optimum in quick service and product information. To make your visit productive, specially trained representatives will be on duty to tell you about their products.

WM. S. MERRELL COMPANY

A summary of mounting clinical evidence attesting to the effectiveness of MER/29 in patients with hypercholesterolemia and related conditions will be presented by MERRELL. Update your knowledge of MER/29 by stopping briefly at the MERRELL display. Salesmen will summarize the extensive results of MER/29 therapy for you and answer questions you may have. Best wishes for a most enjoyable convention.

THE STUART COMPANY

A cordial invitation is extended to all members and guests attending this meeting to visit the Stuart Company booth. Specially trained representatives will be in attendance to answer your questions on new products developed in our new and modern laboratories which have received international acclaim.

ARKANSAS BLUE CROSS-BLUE SHIELD

Annual Committee Reports

REPORT OF THE CANCER CONTROL COMMITTEE

Jean Gladden, Chairman

During the past year the Cancer Control Committee of the Arkansas Medical Society has not met as such. Five of the members of the Cancer Control Committee, according to the by-laws of the Arkansas Division of the American Cancer Society, are members of the Board of Directors of the Arkansas Division. These members have worked actively in the affairs of the Arkansas Division of the American Cancer Society in its program of Research, Education and Service as it pertains to control of cancer.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH

Ben N. Saltzman, Chairman

This committee through its various sub-committees has been fairly active this year. A new sub-committee is being added, a Committee on Diabetes. Dr. Hal Dildy of Little Rock, has agreed to head it. The sub-committee report follows.

REPORT OF THE COMMITTEE ON RURAL HEALTH

Ben N. Saltzman, Chairman

Your chairman was highly honored by being appointed a member of the Council on Rural Health of the American Medical Association. In this capacity, he has attended an annual meeting of the Council in Chicago, a National Conference on Rural Health at Grand Rapids, Michigan, and a Regional Conference on Rural Health in Atlanta, Georgia. The various ideas gleaned from these conferences are being applied to the rural health picture in Arkansas. This year no annual State Conference was held. Instead, this committee has gained approval from the Council of the State Medical Society to enter into the Rural Community Improvement Program of the State Agricultural Extension Service and the Arkansas Power & Light Company. In this program, we will have the cooperation of the State Dental Association. We plan to bring Rural Health very much into the Community Improvement picture. Our program has three phases in which the Rural Communities may participate. They are: (1) Physical examinations for every family; (2) Water and sewage disposal, and (3) Immunizations. These are programs that can be easily applied in any small community and can serve to improve the health of these populations. This program will become effective in April of this year. A winner will be awarded plaques presented by the State Medical Society the following year at an annual Awards Banquet.

The chairman feels that this is the best method we have to bring Rural Health to rural people. In speaking at several meetings this past year, he has noted a remarkable interest in health problems.

REPORT OF THE SUB-COMMITTEE ON INDUSTRIAL HEALTH

C. R. Ellis, Chairman

The Sub-Committee on Industrial Health has not met since the last meeting of the delegates in Pine Bluff. We shall meet before April and have a report at the regular meeting of the delegates on April 16, 1961.

REPORT OF THE SUB-COMMITTEE ON TUBERCULOSIS

Harley C. Darnall, Chairman

There has been no formal action on any problem by the Sub-Committee on Tuberculosis.

The problems of the State Health Department regarding the tuberculosis program have been presented directly to the Council of the Arkansas Medical Society at the meeting last year. These did not come before the Sub-Committee.

REPORT OF THE SUB-COMMITTEE ON LIAISON WITH THE STATE BOARD OF HEALTH

W. Myers Smith, Chairman

There were no meetings of the Sub-Committee on Liaison with the State Board of Health during the year.

REPORT OF THE POLIO ADVISORY SUB-COMMITTEE

Roger Bost, Chairman

There was no activity of the Polio Advisory Sub-Committee during the past year.

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION

C. C. Long, Chairman

The Medical Education Committee met with the Medical Education Committee of Pulaski County and the officials of the Medical Center in December, 1960. At the time of the meeting a recommendation was made that information pertaining to the Medical Center be made available to the doctors and the state society so that such information could be passed on by them to the senators and representatives in their local districts.

It was also recommended that every effort be made to open an office of admission for the hospital with one single admitting officer in charge.

The problem of the admission of patients and the liaison between the Medical Center and local physicians was discussed. The officials of the Medical Center were encouraged to continue and increase this program.

REPORT OF THE SUB-COMMITTEE ON POSTGRADUATE EDUCATION

John T. Riggin, Jr., Chairman

The sub-committee did not meet in formal session this year, but the chairman has been in continual contact with representatives of the Academy of General Practice so as to foster coordination of efforts in the area of postgraduate education. Dr. C. C. Long has continued active support in the dual capacity of Chairman of the parent committee and Board member of the Academy. Dr. Willis Brown's very tangible contribution is well known to those who have participated in his popular Obstetrics-Gynecology courses. The chairman would like to express formally his sincere appreciation and commendation to Dr. James S. Taylor, Professor of Medicine, University of Arkansas, for his generous and unfailing support in giving wise counsel and diligent service to further the effectiveness of continuation education in Arkansas.

The main effort in the postgraduate field continues to be directed towards those in the general practice of medicine. A summation of the year is as follows:

1959-60 UAMC Series

The 1959-60 academic year ended with a total of twelve postgraduate courses having been given at the University of Arkansas Medical Center, three of these in Basic Clinical Electrocardiography. These courses amounted to 215 accredited hours of instruction and a total of 202 physicians participated. The actual number of physician-hours of instruction was 3130. In 1958-59 there were 93 physician-registrants in various courses, so that current participation represents better than a two-fold increase.

1960 Academy Regional Series

The Academy of General Practice staged six regional seminars during 1960 (Clarksville, Harrison, Monticello, Jonesboro, El Dorado, and Little Rock) with a total registration of 234 physicians. These seminars were accredited for 22 hours Category I credit, a total of 866 physician-instruction hours having been accomplished. The Academy and its Committee on Medical Education is to be congratulated on the initiative and vigor with which it has pursued its program in continuation education through these Seminars.

1960-61 UAMC Series

The program underway this year at the Medical Center includes seven of the regular-type courses ranging through subjects in anesthesiology, cardiology, infectious diseases, obstetrics-gynecology, pediatrics, practical psychiatry, and ambulatory surgical problems. In addition, four new programs have been instituted: Cardiology Rounds and Follow-Up EKG Seminars, each for one-half day per month, and a two-week "in-residence" course in Obstetrics-Gynecology. The fourth venture was a two-day "regional-type" course held on successive days at Magnolia and McGehee in early November. The "Basic Clinical Electrocardiography" series is also continuing.

Registrants in the four regular courses held to date plus the regional program comprise a total

of 125 physicians. Twenty-eight physicians have participated in the half-day cardiology and EKG programs. Four additional courses, and possibly another regional program in a different section of the state, are planned for the spring.

REPORT OF THE SUB-COMMITTEE ON THE AMERICAN MEDICAL EDUCATION FOUNDATION

Joseph A. Norton, Chairman

Following is listed the activities of our committee during this year:

1) There have been regular announcements of donors to AMEF in the Journal of the Arkansas Medical Society each month. The Journal has also carried regularly advertisements and articles concerning AMEF. We appreciate the cooperation of the Journal in this effort.

2) In the fall of 1960, there was a mailing from the office of the Arkansas Medical Society in Ft. Smith to every member of the society containing information about AMEF, and asking for donations. We appreciate the cooperation of the society office in this matter.

3) A full page article was accepted and printed in the ARKANSAS PHARMACEUTICAL ASSOCIATION JOURNAL in the fall concerning the plan whereby druggists might give donations to AMEF, rather than Christmas gifts to doctors.

4) A similar contact, as with the pharmacists was made by phone with the officers of Arkansas Funeral Directors Organization to pass on to members the same suggestion. They have no journal and so no article was submitted.

5) An exhibit on AMEF was shown by Dr. McCurry at the district medical meeting in his area. The same exhibit was then shown at the meeting of the Pulaski County Medical Society, in the lobby areas of the St. Vincent's Infirmary and the Arkansas Baptist Hospital in Little Rock.

6) A conference was arranged between the AMEF field representative and the board of the MEFA and the officers of the Arkansas Medical Society, in an effort to co-ordinate the efforts of MEFA and AMEF.

Our efforts during the year have resulted in very little response, as gauged by the donor response. There is confusion in the minds of some of our members concerning AMEF and the new MEFA. We hope that these two organizations can so co-ordinate their efforts as to be of aid to each other. Each has a job to do. We recommend that the House of Delegates consider combining the sub-committee on AMEF with the board of MEFA, so that their efforts might be completely co-ordinated.

It has been a pleasure to serve on this committee.

REPORT OF COMMITTEE ON HOSPITALS

Guy Shrigley, Chairman

This committee has had no matters presented during the past year which required formal action.

Your committee stands ready to serve and act on any matters coming under its jurisdiction.

REPORT OF THE SUB-COMMITTEE ON LIAISON WITH BLUE CROSS- BLUE SHIELD

A. S. Koenig, Chairman

Over the past several years there has been an apparent deterioration of relationship between the Arkansas Blue Cross-Blue Shield Plan, and the Arkansas Medical Society. In the effort to re-establish good relations with the Medical Society, the physician trustees of the Plan were designated by the Board of Governors of the Plan as a liaison group representing the Blue Cross-Blue Shield Plan to the Medical Society. It was at that time suggested to the Arkansas Medical Society that the Sub-Committee on Liaison of the Medical Society be composed of those physicians who are serving as trustees on the Board of Governors of the Arkansas Blue Cross-Blue Shield Plan.

This is the first year in which this change has taken place, the Sub-Committee on Liaison, containing several members who are at present serving as trustees on the board of Blue Cross-Blue Shield. During the ensuing years all non-trustees will be replaced by those who are serving on the Board. This has resulted in a considerable improvement in liaison between the Blue Plan and the Council and Membership of the Medical Society, for your chairman and the members of the Board of Trustees are invited to attend all Council meetings of the Society. In this way, the committee is in a position to keep the Council informed on new developments in the activities of the Blue Cross-Blue Shield Plan, which are of interest to physicians of the state.

At the annual meeting in 1960 there was presented to the House of Delegates a Blue Shield certificate for the care of senior citizens over the age of 65 on a service basis. By a majority of one vote the House of Delegates rejected the service principle on the certificate although they approved the other aspects of the coverage. During the past year, although this certificate had been authorized by the Board of Governors, it has not been issued by the Plan because of a threat of impending legislation by the national Congress to cover over 65 individuals under Social Security. Another feature which was responsible for the delay in issuing this contract to senior citizens was the fact that the Arkansas Blue Cross-Blue Shield has already in effect a senior certificate, under which some five thousand of the states' elderly people are already covered. At the present time, further work is in progress within the Plan on this type of coverage.

Early in 1960 it became apparent to the Board of Trustees of Blue Cross-Blue Shield that it would be necessary to impose a rate increase on the subscribers of the program because during the past year additions to reserves have dwindled considerably, and the Plan was forced, on occasion, to dip into reserves to pay outstanding claims. It was the feeling of the Board and the executive personnel of the Plan that if a rate

increase were to become necessary, that an effort should be made to expand coverage to the subscribers.

Negotiations were then undertaken through the Hundley Committee with the members of the Sub-Committee on Liaison and the executive personnel of the Plan, to develop an expansion of medical benefits in the new contracts to be issued. The Hundley Committee approved the proposal of Blue Cross-Blue Shield and they were subsequently presented to the Council, which also approved the new contracts. They are now in the process of being issued.

The in-hospital medical benefits under the new contracts represent a distinct step forward, for under the new contracts, in addition to increases for payment of in-hospital visits which begin on the third day rather than on the fifth, as formerly, there is also a considerable increase in compensation for certain named diseases.

The surgical and medical schedules under the new contract have been raised above the level of those in the old contracts, and a high level or low level coverage may be purchased at the option of the subscriber.

The Sub-Committee on Liaison with Blue Cross-Blue Shield is maintaining close contact with The Arkansas Medical Society through the Council and are also, by virtue of being trustees on the Plan, in a position to defend and represent the Medical Society which nominated them to their positions on the Board of Trustees. It is to be emphasized that the members of the committee welcome any suggestions or criticisms from the membership of the Society, for alterations or improvements which might be made in pre-payment health coverage under Blue Shield. The members can be assured that the Committee will give them due consideration and will present constructive suggestions to the Board of Trustees of Blue Cross-Blue Shield.

REPORT OF THE COMMITTEE ON PUBLIC RELATIONS

Fount Richardson, Chairman

The Public Relations of the Society have been chiefly the accomplishment of the Secretary, Mr. Paul Schaefer, for the past year.

Largely through his efforts there has been an increased number of contacts by physicians with the influential segment of the Public. There has been an increase in the number of talks given by physicians before the various service clubs.

Perhaps the greatest effort of this segment of our society has been in the interest shown by increasing numbers, in the political world. Many physicians, officers and members alike have expressed their views to Legislators and Congressmen and urged others, notably the Chambers of Commerce, to do likewise.

This effort should continue through the coming year.

Mr. C. A. Vines, Director of Cooperative Extension Work in Agriculture has approached the Society with a public relations program which can be useful in giving access to many of our citizens. An "Arkansas Future Series" is in the planning

stage and may be a valuable thing for our people and our state. It is contemplated that the Medical Society will work in the series and find it useful in spreading health information to our citizens.

SUB-COMMITTEE ON STATE HEALTH AND MEDICAL RESOURCES FOR CIVIL DEFENSE

M. D. McClain, Chairman

No formal committee meetings on Civil Defense were held during the year, but some meetings of other agencies which tie in with the medical profession were attended. From these and the study of the problems, some recommendations will follow.

It seems obvious that there needs to be liaison between all professions which includes the Public Health Service, veterinarians, dentists, registered nurses, licensed practical nurses, also those classified as aides can give a great deal of help in an emergency. There should be a practical plan for a disaster, not merely a plan. It is understood that there is a plan in each county judge's office in the state but this should be made known to each member of that county's medical society. Consequently, for this to be practical each member of each county society should have both a primary assignment and then a secondary assignment if the primary assignment is not practical. In addition to the county level of assignments, it seems logical that there should be some co-ordination within a district level. The reason for this is that there is always the possibility that a great many persons might be displaced from some other area which would suddenly throw some tremendous increase in population in an area that does not ordinarily have this many. Therefore, it might be necessary to request medical help from surrounding counties or even further. The state Civil Defense office has the information that in each county it is known from time to time how much food is available in case this tremendous increase in population should occur. Therefore, it is suggested that each county medical society president or his representative be familiar with the county plan which is supposed to be in each county judge's office, and let this be one of the things brought before the county society during the ensuing year.

Apathy

This is an unknown quantity but seems to be general. As to what could be done about it, that is a big question. At the present time it seems that it will probably take some accident larger than the plane crash in Little Rock in March 1960; something bigger than this will be necessary to change public opinion and keep it changed.

Inasmuch as there is a changing concept of treatment of emergency measures as well as new weapons being developed, it would seem wise if probably under the direction of the University of Arkansas Medical School, courses at stated intervals might be made available for the training of key doctors in the state in the latest development of emergency treatment. By key doctors are meant those who in addition to taking this course would be able to give the practical points of

training in their own areas whether it be county or district to associated and allied professions who would necessarily be called upon for help.

At the present time emphasis seems to be placed upon individual family shelter protection. Possibly a good deal of cooperation for this might be derived from the medical auxiliaries. At the present time this is thought to be the most practical plan for survival of nuclear attack. This also entails the details of available food and water as well as a teaching program down the individual level. The doctor's role in this boils down to a psychiatric angle and then full treatment, not emergency treatment after possibly a two week period in shelters by the survivors. It is at this period that full, complete coordination of MD's in the entire state should be fully coordinated for sometime which probably would be through military channels.

Communications

It has long been known that this is potentially the weakest link in the chain. The FCC has allotted certain channels for hospitals and also certain channels for doctors. These channels are separate from the citizen's wave band channels. As far as is known by us, these channels available to doctors have not been utilized in this state. In view of the apathy which is admittedly present, it may seem like making a mountain out of a mole hill to recommend that there be separate sub-committees appointed to work on communication among the doctors of the entire state as well as separate sub-committees for other facets of Civil Defense. There are approximately sixteen 200-bed hospitals in knockdown form available in the state at supposedly strategic locations which would be available. Naturally it seems to this observer that some MD in each county should know at a moment's notice as to where these are, how they may be procured and what method of communication is available with Civil Defense headquarters to get them. Incidentally, a few of these hospitals are always available for training purposes. Stock piles of strategic drugs are located in various places throughout the United States but again if a lack of communications should occur, these would be valueless unless they were at the place needed. The drug houses have cooperated in keeping these drugs up-to-date.

Liaison With Allied Agencies

As is usual, everyone takes for granted that the doctors will be able to be available at any time for any emergency when asked. For this reason, it seems plausible that some liaison to the local level should be informed as to what might be expected from Civil Defense agencies whatever they may be in that area. As was stated earlier, unless they know their first and second assignment there may be a great deal of lost motion if they should be called upon. Actually, if a large scale disaster, particularly one involving radiation or bacteriological warfare, were concerned the medical men would probably be required to coordinate the allied agencies.

Obviously, this will be a never ending problem, and it is recommended that continuous effort be pursued.

REPORT OF THE SUB-COMMITTEE ON VETERANS ADMINISTRATION AFFAIRS

John W. Dorman, Chairman

There has been no activity in the Sub-Committee on Veterans Administration Affairs during the past year.

REPORT OF THE COMMITTEE ON INSURANCE

L. E. Drewery, Chairman

The segment of the Insurance Committee assigned to the Hospital, Insurance, and Physician's Committee held five meetings during the year to discuss interrelated problems.

There seems to be a greater awareness on the part of the physician as to his responsibilities in regard to the patient and his insurance contract. During the past six months, not one complaint has been brought against the physician by the insurance industry to the HIP Committee. Guy Farris, M.D. was elected chairman of the Group for the coming year.

The Standard Claimant's Statement Form has been adopted in Arkansas, and its use has been recommended by the Insurance Commissioner Combs. A meeting of the HIP Committee is scheduled for March, 1961, at Hot Springs, at which time this form will be further simplified, and requests will be made of Insurance Commissioner Combs to recommend its use more fully.

A study is underway by the Insurance Committee in regard to a Retirement Program for Physicians in which Life Insurance, Annuities, and Growth and Income Producing type investments be tied together in a unified program. The membership will be canvassed before the annual meeting of the AMS, and recommendations will be made to the House of Delegates in regard to this program.

The Chairman of the Insurance Committee spent a day in Chicago, with two Vice-Presidents of the Continental Casualty Company, and ways were discussed in which a more satisfactory contract for Senior Citizens could be made available to older people in Arkansas. The executives of this company have recommended to the insurance industry that they become more dynamic in selling insurance to older people, but stated that most insurance companies were waiting to see what the Federal Government would do in the health field for older people. Blue Cross-Blue Shield is also reluctant to expend much money or effort at the present time in selling insurance contracts to Senior Citizens, because of the Federal Government advocating health care for older people under the Social Security mechanism.

The Chairman of the Insurance Committee had the privilege of attending the White House Conference on Aging. The impression obtained was that the Chief Executive and the Congress would extend medical service to older people and to disabled people; total health care to be given under the Social Security System. Although this health program is not of direct concern to the Insurance Committee, we recommend that the

Liaison Committee, with the Welfare Department of the State of Arkansas, be strengthened and that the greatest possible service be rendered under the present program, as spelled out by the Mills-Kerr Bill, in a most economic manner.

REPORT OF THE COMMITTEE ON ARRANGEMENTS FOR THE ANNUAL SESSION

John Wood, Chairman

First, as chairman, I would like to express my appreciation to the members of this group for their splendid cooperation and excellent attendance at our committee meetings.

The problem continues to exist however in securing the speakers recommended by the various sections. In some instances neither of the two suggested speakers could appear. Not all of the various sections submitted their choice of speakers following their sectional meetings at last year's Annual Session as was suggested. This procedure would greatly simplify matters each year if prospective speakers would be discussed and selected, these names to be turned over to the Executive Secretary before the Session adjourned.

In addition, it would be well to invite and encourage any member of the Society to submit the names of prospective speakers to the Annual Sessions Committee for consideration.

The Committee has reduced the number of papers to nine (9) this year. The attendance at the early morning sessions in the past was quite poor. This reduction in the number of papers has made it impossible to have every section represented each year. However those not represented this year should be given first consideration for the session in 1962.

I am sure that the new Annual Sessions Committee for 1962 would invite and appreciate any comments or suggestions from the Society at large.

REPORT OF THE CONSTITUTIONAL REVISIONS COMMITTEE

W. R. Brooksher, Chairman

The Committee on Constitutional Revision recommends against passage of either of the following two proposed amendments:

(1) Committee on Budget and Finance

1. Amend Chapter VIII, Section 1A of the By-Laws of the Arkansas Medical Society so as to add thereto the following:

"11. Committee on Budget and Finance."

2. Amend Chapter VIII of the By-Laws of the Arkansas Medical Society so as to add thereto the following:

"Section 12. The Committee on Budget and Finance shall consist of nine members. Immediately upon the adoption of this amendment the President of the Society shall appoint three members for a term of three years, three members for a term of two years, and three members for a term of one year. Thereafter all appointments shall be for a term of three years. No member of the Committee shall be eligible to succeed himself.

The Treasurer of the Society shall be an ex officio member of this Committee.

"The Committee on Budget and Finance shall supervise the bookkeeping and accounting of the funds of the Society. It shall prepare the annual budget of the Society taking into due consideration (a) the budget for the past years; (b) the anticipated revenues of the Society; and (c) the anticipated financial needs of the Society. As soon as the budget is approved by the Committee it shall cause same to be published in the Journal of the Society along with the existing budget and the audit, at least one month prior to the annual meeting. The budget shall be submitted to the House of Delegates for its adoption or revision. Any money expended in excess of the budget shall be clearly shown in the annual audit as money expended outside of the regular budget."

(2) Membership

Amend Section 2, Article IV, of the Constitution, to read as follows:

Section 2. Active Membership

"The active membership of this Society shall comprise all the active members of its component societies. Only such person is eligible for active membership in a component society as (1) possesses the Degree of Doctor of Medicine, issued by a medical school, which at the time such degree was conferred, was approved by the Council on Medical Education and Hospitals of the American Medical Association, and (2) holds also an unrevoked license to practice medicine and surgery issued by the Board of Medical Examiners which consists of members recommended by this Society. The eligibility requirements set forth in the preceding sentences are not to apply, however, to members in good standing in any component society at the time of the adoption of this section, nor shall they apply to a physician practicing in a county which had no active medical society at the time of the adoption of this section who became a member of the county society upon its formation and who has been continuously a member of said county society and who is now an active member in good standing thereof."

REPORT OF THE BUDGET
COMMITTEE

W. R. Brooksher, Chairman

The Budget Committee respectfully submits the following proposed budget for 1961:

INCOME

Membership Dues	\$ 35,300.00*
Journal Advertising	37,000.00
Booth Income	5,100.00
Annual Session Income	5,250.00
AMA Reimbursement	240.00
Income from Medicare	22,000.00
Miscellaneous	200.00
Interest on Bonds	1,200.00
Retirement	225.00
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	\$106,515.00

* Estimated Income from \$5 dues increase earmarked for the Medical Education Foundation for Arkansas is not included.

EXPENSE

Salaries—	
Medicare	\$ 11,950.00
Journal	8,120.00
A.M.S.	11,900.00
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Total	\$ 31,970.00
Travel and Convention	8,500.00
Taxes—	
Medicare	369.00
A.M.S.	291.00
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Total	660.00
Retirement Fund—	
Medicare	1,600.00
A.M.S.	1,258.00
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Total	2,858.00
Stationery and Printing—	
Medicare	500.00
A.M.S.	500.00
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Total	1,000.00
Office Supplies and Expense—	
Medicare	2,500.00
A.M.S.	1,500.00
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Total	4,000.00
Telephone and Telegraph—	
Medicare	1,000.00
A.M.S.	1,800.00
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Total	2,800.00
Rent—	
Medicare	1,344.00
A.M.S.	1,056.00
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Total	2,400.00
Postage—	
Medicare	1,000.00
A.M.S.	1,600.00
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Total	2,600.00
Insurance and Bonds—	
Medicare	255.00
A.M.S.	405.00
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Total	660.00
Auditing—	
Medicare	510.00
A.M.S.	375.00
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Total	885.00
Council Expense	300.00
Journal Printing & Expense	26,075.00
Annual Session	7,100.00
Senior Medical Day	500.00
Public Relations	500.00
Dues & Subscriptions	600.00
Contributions	1,000.00

Woman's Auxiliary	1,100.00
Legal Service	1,750.00
Special Committees	100.00
Rural Health	500.00
Miscellaneous	250.00
Office Equipment	600.00
Arkansas Breakfast at AMA	1,000.00
Depreciation—	
Medicare	561.00
A.M.S.	441.00
Total	1,002.00
	<hr/>
	\$100,710.00**

** Estimated transfer of \$5,850 to the Medical Education Foundation for Arkansas not included.

REPORT OF THE COMMITTEE ON SENIOR MEDICAL DAY

W. R. Brooksher, Chairman

The annual Senior Day was again well-received by the Senior Class of the University of Arkansas School of Medicine and should be continued. The Committee believes that a better participation by officers and members of the Society would serve to add interest to the program.

REPORT OF TRAFFIC SAFETY COMMITTEE

C. Lewis Hyatt, Chairman

Activities of the Traffic Safety Committee for the past year have been as follows:

(1) Received and distributed pamphlets and correspondence to committee members and others from the AMA, from the State Medical Society, from the National Safety Council and from members of our Arkansas congressional delegation. Pamphlets concerning traffic safety and physical examination for drivers license distributed to doctors and patients through their waiting rooms.

(2) Corresponded with all of our congressional delegation and senators regarding traffic safety with special emphasis on legislation designed to set safety standards for traffic vehicles owned by the federal government.

(3) Corresponded with editors of several Arkansas papers, including the Arkansas Democrat, Arkansas Gazette, Pine Bluff Commercial and Monticellonian, regarding traffic safety conditions in this area, especially the hazard of livestock on the highways in violation of the state law. Also corresponded with Radio Stations KVSA and KHBM for the same purpose.

(4) Took an active part in efforts to successfully pass the local stock law in Drew County designed to implement and enforce keeping livestock off the highways.

REPORT OF THE SPECIAL COMMITTEE ON THE MEDICAL CENTER

Clifton C. Long, Chairman

During the present year this committee has not met so there is no activity to be reported.

REPORT OF THE SUB-COMMITTEE ON PHYSICAL FITNESS AND SCHOOL HEALTH

Roger B. Bost, Chairman

Furnished speakers for Regional Teachers and Principals Conferences throughout the State on School Health. The Subcommittee Chairman addressed the Southwestern Regional Conference at Mena.

Initiated a program for the development of Child Guidance Centers in several of the larger cities in the state following the example set by Fort Smith which now has a Community supported fulltime Guidance Center.

Sub-Committee Chairman spoke at the South Central Meeting of the American Association for Mental Retardation held at the Children's Colony in Conway.

REPORT OF THE COMMITTEE ON LIAISON WITH THE STATE WELFARE DEPARTMENT

C. R. Ellis, Chairman

The Committee on Liaison with the State Welfare Commission has met three times since April, 1960. Almost all of the discussion has been concerning the Mills-Kerr bill for medical assistance to the aged (those 65 years and older). This is Public Law 86-778. The Welfare Department was represented by Dr. B. T. Kolb at two meetings and by Mr. Adams and Mr. Moss at one meeting.

Since a resolution requesting a study of the "problem of medical indigency in liaison with the State Welfare Department" was referred to this committee, we submit the information listed below:

Governmental Expenditures for the totally and medically indigent of Arkansas for the fiscal year 1959-1960 (Welfare Department).

Expenditures	
1. Professional care for the totally indigent	None
2. Hospital care for the totally indigent (State & Federal)	\$2,789,781.50
3. Drugs (outside hospital or nursing home) for totally indigent	None
4. Nursing home care for totally indigent	2,118,115.00
5. Professional care for medically indigent	None
6. Hospital care for medically indigent (Act 115)	300,000.00

Total (State & Federal) funds for totally and medically indigent ...\$5,207,896.50

The following income figures were given on Arkansas citizens over 65 years of age (Welfare Department figures):

Number	Annually
113,000 income less than \$1,000.00	
142,000 income less than 1,500.00	
158,000 income less than 2,000.00	
168,000 income less than 2,500.00	
174,000 income less than 3,000.00	

These figures include 64,000 persons already covered by Welfare programs which would not be affected by the Mills-Kerr program.

As noted, all the figures above were given to us by the Arkansas State Welfare Department. The Rehabilitation Service of the Arkansas Education Department makes some medical expenditures; however, we are not sure these are confined to the indigent or medically indigent.

With the above information before us and after much discussion of many aspects of this program of Medical Assistance for the Aged (M.A.A.) under Public Law 86-778, the committee made the following recommendations to the Council:

1. A study be made to learn the number of people receiving Welfare assistance, the number of cases treated as charity cases by hospitals and by doctors (not including bad debts and welfare clients);
2. The Society approve the Welfare Department administering the new Federal Medical and Hospital Program (Mills Bill);
3. The members of our state society cooperate with this M.A.A. program to the fullest extent, including charges for our professional services.
4. The relative value schedule of California be used as basis for our fees, using a Unit value of 5.

The first recommendation was approved by the Council, and questionnaires have been mailed to all members of our state society. The results of this survey are not yet available.

Recommendation Number 3 above was approved by a special meeting of the delegates, but Number 4 was not approved.

The Committee plans to consider the relative value schedule further, hoping eventually to assist in setting up one relative value schedule for all our government programs with only a slight modification, if any, in the unit value for each.

In their budget presented to the legislature, the Welfare Department included a request for money to pay physicians for the care of patients on this M.A.A. program. When the Chairman talked with Mr. Carl Adams late in January, their budget had not been brought before either the House or Senate. When the appropriation is made by this legislature, however, the money will not be available until July 1, 1961.

The Committee hopes to have a fee schedule worked out for presentation to the Council and the delegates in Little Rock on April 16, 1961.

I would like to extend my sincere thanks and appreciation to the members of this Committee and to other physicians and to members of the Welfare Department for their cooperation. I hope they and others of our society will continue to work for the best medical care for all people, hoping to keep this type program (1) confined to the totally or medically indigent, and (2) locally controlled.

REPORT OF THE ARKANSAS STATE ADVISORY COMMITTEE TO THE SELECTIVE SERVICE SYSTEM

Gerald H. Teasley, Chairman

There has been very little activity of this committee during the year 1960. There have been less than six requests for information concerning the availability of physicians.

As long as volunteers from among the recent graduates continue to fill the requirements, it is not expected that there will be calls for many physicians in private practice during the next year.

REPORT OF THE FIRST COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

R. C. Shanlever, Chairman

The Professional Relations Committee of the First Councilor District of the Arkansas Medical Society reviewed several Medicare claims during the past year. Few adjustments were made in the claims and these adjustments were all apparently satisfactory to both Medicare and the doctor who had filed the claim.

REPORT OF THE SECOND COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

J. F. Jackson, Chairman

There have been two cases submitted to this Committee in 1960 and both of them were a question of fees by Medicare. These were settled satisfactorily to all parties concerned.

REPORT OF THE THIRD COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

M. C. John, Jr., Chairman

Six Medicare claims were submitted to the Third Councilor District Professional Relations Committee during the past year for review. All of these cases were settled or adjusted to the satisfaction of all concerned.

REPORT OF THE FOURTH COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

H. T. Smith, Chairman

There has been no activity of the Fourth Councilor District Professional Relations Committee during the past year.

REPORT OF THE FIFTH COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

Joe F. Rushton, Chairman

There has been no activity of the above committee for the past year.

REPORT OF THE SIXTH COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

R. R. Kirkpatrick, Chairman

This is a narrative report of the activities of the Sixth Councilor District Professional Relations Committee for the year 1960.

Our work has been relatively light. We have had two Medicare cases to adjust. These were both due to slight overcharges on the part of the doctors — in my mind in each there was a question whether there was much overcharge, but since it didn't correspond with the rules and regulations the charges were reduced slightly, and they seemed to be satisfied with the adjustment.

REPORT OF THE SEVENTH COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

J. W. Kennedy, Chairman

This committee processed some twenty cases for this area. All have been settled satisfactorily with the exception of one case in which there was some emotional disturbance of the patient. She was mentally unable to grasp the problem involved. This did not involve a liability suit.

This committee would like to thank the Garland County Medical Society and their Professional Relations Committee for their counsel and willingness to co-operate in solving some of the problems that have arisen this year.

There were three instances of law-suits pending which were settled outside of court.

The Medicare Program on the whole was without any serious problems.

REPORT OF THE EIGHTH COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

Henry G. Hollenberg, Chairman

In this District our Committee functions for practical purposes only in respect to Medicare claims. Grievances continue to be handled by a special County Committee.

We have again processed a large number of these Medicare claims, about 50 percent of those in the entire state, we understand. We have the complete cooperation of our Fort Smith office and on the whole are impressed by a general spirit of cooperation and satisfaction on the part of our physicians.

In numerous instances however our physicians have been disgruntled at the red tape necessary in processing their forms. Our Committee has worked diligently with the Fort Smith office in an effort to minimize or eliminate certain petty requirements. However it must be admitted that there would be little confusion if each physician or his secretary would read just a few pages of the blue Medicare Manual and carry out the detailed instructions demanded by Washington.

In a few instances our physicians have become very exasperated with certain phases of the program such as the amount of the fee, delay in payment, or most of all, repeated supplementary questionings.

The Chairman of this Committee has acted in this capacity for some years even before the Medicare Program was instituted. As of January the 1st, 1961, he has resigned and is succeeded by Dr. Richard Logue.

REPORT OF THE TENTH COUNCILOR DISTRICT PROFESSIONAL RELATIONS COMMITTEE

Art Martin, Chairman

The Tenth Councilor District Professional Relations Committee has had no complaints during the past year. Our activity has been limited to review of Medicare claims. A total of 37 Medical Society cases have been reviewed.

REPORT OF THE ARKANSAS STATE MEDICAL BOARD

Joe Verser, Secretary

The Secretary of the Arkansas State Medical Board makes the following report of the activities of this Board since the last meeting of the Arkansas Medical Society:

The Officers and Members are as follows:

Frank M. Burton, M. D., Chairman

Jeff Baggett, M. D., Vice-Chairman

Joe Verser, M. D., Secretary and Treasurer

G. D. Murphy, Jr., M. D.

Wm. A. Snodgrass, Jr., M. D.

H. J. Hall, M. D.

Hugh R. Edwards, M. D.

Earle D. McKelvey, M. D.

John F. Guenther, M. D.

The Board investigated every case of violation of the Medical Practice Act reported to the Secretary during the year. One court conviction was obtained and four cases are now pending. Five injunctions were issued.

The Board revoked the license of one physician for conviction of a crime involving moral turpitude.

A yearly financial report of the Board's activities, as prepared by Winter, Johnston & Company, Certified Public Accountants, was sent to and approved by the Council of the Arkansas Medical Society and published in the Journal.

Following is a report of the Board's proceedings from February 1, 1960 to February 1, 1961:

Physicians registered for 1961:

Resident	1210
Non-Resident	654
Physicians licensed by examination	86
Physicians licensed by reciprocity	23
Physicians certified to other states	69
Licenses revoked for non-payment of annual registration fee	16
Licenses suspended for non-payment of annual registration fee	50
Court convictions obtained	1

ARKANSAS MEDICAL SOCIETY MEETING, APRIL 16-17-18-19, 1961

Cases pending	4
Injunctions issued	5
Licenses revoked	1

Following is a financial report covering the period February 1, 1960 to February 1, 1961. A yearly audit will be made in June, 1961.

Cash balance in bank —	
February 1, 1960	\$ 8,541.73
Time deposits	13,640.41
Cash on hand	307.00
	<u>\$22,489.14</u>

RECEIPTS:

Registration fees	6,857.40
Certification fees	995.00
Reciprocity fees	3,500.00
Primary examination fees ..	2,312.50
Final examination fees	1,812.50
Four-year examination fees	650.00
Duplicate certificates	5.00
Directory sales	194.00
Physical Therapy fees and dues	203.00
Temporary Permits	175.00
Miscellaneous	62.25
Interest on time deposits ...	461.84
	<u>17,228.49</u>
Total Cash Available	<u>\$39,717.63</u>

DISBURSEMENTS:

Salaries, FICA tax, fees and expenses of Board Members	\$ 9,666.06
Attorney's fee, expense and investigations	2,967.02
Dues and expenses to Federation of State Boards of U. S.	600.00
Office rent, supplies, printing, telephone, postage, etc.	1,939.94
Refund of fees	95.50
CPA audit	175.00
Physical therapy expense—printing, refund of fees, etc.	54.00
Miscellaneous—returned checks, bond, box rent, etc.	274.65
	<u>15,772.17</u>
Cash balance in bank—February 1, 1961	9,843.21
Time deposits	14,102.25
	<u>23,945.46</u>
	<u>\$39,717.63</u>

ANNUAL REPORT TO THE ARKANSAS MEDICAL SOCIETY FROM ARKANSAS STATE BOARD OF HEALTH

John T. Herron, M.D., State Health Officer
Vital Statistics

A total of 41,112 births were recorded in the calendar year of 1959, representing a rate of 23.0 per 1,000 population. 16,723 deaths were

recorded showing a death rate of 9.4 per 1,000 population. Also, a total of 666 fetal death were recorded.

The ten principal causes of death for 1959 were as follows:

Cause of death	Total	Rate per 100,000 pop.
1. Heart disease (all forms) ..	6,118	342.0
2. Neoplasm (cancer)	2,431	135.9
3. Vascular lesions affecting central nervous system (stroke)	2,273	127.1
4. Accidents (all types)	1,114	62.3
5. Diseases of early infancy ...	569	31.8
6. Influenza and pneumonia ...	486	28.2
7. Diabetes mellitus	214	12.0
8. Nephritis and nephrosis	213	11.9
9. Diseases of liver, gallbladder, and pancreas	180	10.1
10. Tuberculosis (all types) ...	171	9.6

All certificates of births, death, fetal death, marriage, and divorce are bound in volumes, indexed, and tabulated. Microfilm copies of all certificates of birth, death, and fetal death; photostatic copies of all certificates of birth, death, and fetal death which occurred within the State but of legal residence outside the State; and a 10 percent sample of all deaths are mailed to the National Office of Vital Statistics, Washington, D.C.

All deaths are coded as to primary statistical cause according to the rules of the **Manual of Joint Causes of Death** as set forth in the **International Statistical Classification of Diseases, Injuries, and Causes of Death**.

There were 8,834 delayed birth certificates and 11,348 prior to 1914 certificates of birth placed on file during the year 1959.

18,462 marriages and 7,227 divorce decree records were filed in the year 1959. This is a ratio of 2.6 marriages to one divorce.

A total of 915 adoptions were processed during the year 1959.

Hospitals

During 1960, the Division of Hospitals licensed 144 hospitals and infirmaries and 90 nursing homes. Several new hospitals and nursing homes were licensed. Privately financed additions were constructed to six nursing homes, with a total of 72 beds. Seven new privately financed nursing homes, with a total of 204 beds, were completed. There are several nursing homes and nursing home additions in the planning stage. Additions to four existing homes are also under construction.

There has been considerable progress made in obtaining compliance with the Licensing Law and Standards for Nursing Homes in the State.

The annual revision of the "State Plan for the Construction of Hospitals and Related Facilities" was made as required under the Federal (Hill-Burton) Hospital Construction Program.

Under the Hill-Burton Program four hospital projects, three nursing home projects, and two

public health center projects were completed during the year. Construction is under way on eleven projects at this time, and plans are being prepared on eleven others. One hospital totaling 22 beds has been completed with local funds. Seven privately financed additions to hospitals were constructed in the State, adding a total of 75 beds. Three other privately financed hospitals are under construction, and three locally financed additions to hospitals are under construction.

Plans and specifications for all hospitals and nursing home construction in the State are reviewed and approved by the Division. Other services provided by Division personnel include inspection of all hospital and nursing home construction and routine inspections of hospitals, nursing homes, and buildings which are proposed to be used as nursing homes.

Public Health Education

The Division of Public Health Education has attempted during the past year to establish priorities for conducting a program of health education with the citizens of the state. The establishment of such a program is difficult since there are, serving the entire state, only two professional health educators in this Division and one in a local health department.

Top priority has been given to working with and through organizations and agencies already in existence that conduct programs with health education implications. This includes civic clubs, schools, churches, voluntary health agencies, and others. The utilization of mass media has also been given high priority. Television, radio, and newspaper outlets have been supplied material and programs on such subjects as immunization, polio, mental health, and safety. Considerable effort has been made to work with school faculties, parent groups, and teacher-training institutions to improve the quality of health education in the schools.

This Division also serves as a service Division to all other personnel in the Department in their health education aspects of their programs. This has included work on the education phase of such programs as communicable disease, maternal and child health, dental health, mental health, and public health nursing.

The procurement, distribution, and utilization of literature and audiovisual aids continues to be a major responsibility of this Division. Almost 300 different pamphlets are made available through local health departments to all citizens from this Division. These cover the entire range of health topics. The film library stocks 1,200 prints of films and filmstrips on health subjects. There were 6,554 requests for films filled during 1960. This was an increase of 440 over the previous year. There were an additional 446 requests that could not be filled because films were already scheduled.

Personnel in this Division includes two health educators, a film librarian, a film technician, and a stenographer.

Local Health Services

Our total population is beginning to appreciate the fact that basic public health services as well as certain specialized programs are a necessity in our advancing complex civilization. This attitude and awareness is reflected in the positive action of federal, state, county, and city appropriating bodies in providing modest financial increases to support public health programs, and build more hospitals, health department buildings, and nursing homes.

As our civilization and science advance coupled with a rapidly growing population and an extended life expectancy, which creates a large old age group, many new services and programs are needed. These new programs require considerable financial outlay to organize, employ professional workers, and render the needed services. New programs are badly needed in industrial health, radiological health, chronic diseases and disabilities of the older age group, and diabetes control. Existing programs and services such as tuberculosis control, heart disease control, mental health, rehabilitation, nutrition, dental, desirable housing, nursing homes, etc., need to be further expanded.

Salaries offered to professional public health workers in the state are entirely too low to attract and make recruitment possible. We continue to lose trained workers to industry and other higher paying fields, many of which are not related to public health. At present our professional staff throughout the state is 50 percent of the number needed to render minimal adequate services and execute all phases of a local public health program. At present the total number of graduate nurses and public health nurses serving the public throughout the state in rural and urban areas is 125. This is approximately one nurse per 14,000 population; at least one nurse per 5,000 population is needed according to national authorities and accepted national standards. This indicates that we are short at least 200 nurses. Likewise we have at present 36 sanitation officers serving the people of the state. On the basis of accepted standards, one such professional worker is needed for each 15,000 population. Our ratio is one for each 40,000. This indicates that we are short some 50 such workers. We now have employed five full-time local medical directors and two part-time. One full-time medical director is needed for each 50,000 population. This indicates that we are short at least 30 public health physicians.

As our population becomes educated to the need of improved and expanded public health services and the improvement of total health, undeniable demands for such services will be made by the public. This prospect will further stimulate advances in environmental sanitation, new medical discoveries, case finding, and early diagnosis in improving the general public health of our entire population.

Communicable Disease Control

The Communicable Disease Control Division encountered a major localized poliomyelitis epi-

demic during the closing months of 1959 and early winter months of 1960. Reviewing the past ten years, 1960 was the second lowest in number of reported cases, 1958 being our low experience for this decade. It should be pointed out that 1959, although the highest of the years since 1954, was less than that of any year in the period 1950-1954.

It is apparent that the lowered incidence of poliomyelitis experienced by Arkansas's population is a reflection of an accumulation of immunized individuals through the efforts of the National Foundation for Infantile Paralysis in the Field Trials of 1954 and their school program of 1955, followed by Federally purchased poliomyelitis vaccine allocated through the Health Department from 1956 through March, 1960, administered by policies of the local Medical Societies and supplemented by private physicians. Many cities and counties are presently continuing purchases of poliomyelitis vaccine in order to avoid a return of large numbers of susceptible individuals. Each physician should encourage the families under his care to maintain immunizations against poliomyelitis as well as other infectious diseases.

The Communicable Disease Control Division has found it necessary to add ten new names to the chronic typhoid carrier register, bringing the total to 176. Each new carrier represents considerable tedious and careful epidemiological investigation of newly reported cases. In spite of constant supervision, these carriers have accounted for many of the 52 cases reported in 1960, thus refuting the popular opinion that typhoid fever is no longer a menace, also emphasizing the need for vigilance and stressing the importance of improved water supplies and sewage disposal systems as well as continuation of adequate typhoid immunization as long as carriers exist.

Diphtheria outbreaks, occurring mostly in the eastern part of the state, for the most part among low socioeconomic segments of the population, point out the accumulation of large numbers of susceptibles to these virulent organisms. It also emphasizes the tendency to procrastinate, since many of the immunizations were given after three of the 16 reported cases terminated fatally. We are presently engaged in a study and evaluation of the immunization status of all reported diphtheria cases.

Following the nationwide pattern of increases in infectious hepatitis, there has been a 200 percent increase of reported cases in Arkansas. The American National Red Cross is furnishing gamma globulin free of charge, in limited amounts, allocated by counties through the State Health Department for the prevention of infectious hepatitis. This preparation is also available commercially. Needless to say, the aforementioned sanitary improvements plus improved personal handwashing generally would eliminate the human suffering from the disease as well as the need for this expenditure.

As usual, the Communicable Disease Control Division is confronted by problems with numerous other communicable diseases, namely: asep-

tic meningitis, brucellosis, measles, German measles, mumps, salmonellosis, shigellosis, streptococcal sore throat, tetanus, and tularemia.

Veterinary Public Health Services

The Veterinary Public Health Program of the State of Arkansas continues to demand additional efforts on the control of diseases which are transmissible to man. A number of these diseases in the animals of Arkansas are: rabies, brucellosis, leptospirosis, anthrax, newcastle disease, blastomycosis, and equine encephalomyelitis.

Animal rabies in Arkansas is the most serious problem because the disease has become firmly established in the fox population in various parts of the state. The large number of animal bites in the state results in a great number of human exposures to rabies and a decided loss of domestic livestock. The number of reported cases of rabies during 1960 is 320, as compared with 283 in 1959. This animal rabies problem has slowly spread from those areas and counties which reported the presence of animal rabies to clean areas and counties which had not previously reported cases. This spread has taken place in spite of the efforts of the State Health Department, the Game and Fish Commission, and the State Veterinarian to hold the disease under control. The greatest possible assistance has been provided to the local health units and other county officials in combating the animal rabies problem. When requested by local officials, quarantine measures were established. Over 91,225 pet animals have been routinely vaccinated against rabies in an effort to build a band of immunity between the wildlife vectors and the human population. This was accomplished by extensive educational programs by every means possible. Advice and consultation concerning both human and animal exposures were provided to physicians, local health units, local officials, and many exposed individuals. The State Health Department provided both hyperimmune rabies serum and rabies vaccine at cost to local health units for treatment of exposed individuals when requested. Lederle Laboratories continue to supply pre-exposure human rabies vaccine through the State Health Department without cost. This type of vaccine was used on the occupational groups which are exposed to the greatest number of animal bites.

The climatic conditions in the year 1960 were not conducive to producing anthrax in man and animals. Extensive vaccination each year is practiced by the livestock owners in those areas where anthrax regularly occurs. This situation can certainly account for the great reduction in the number of animal cases.

Leptospirosis, a disease of all livestock and wildlife, which is transmissible to man, presents a great problem in the State of Arkansas. The disease is easily spread from one animal to another and is difficult to control. The disease spreads to the human population by contact with animals, animal products, or infected ponds and streams.

Brucellosis, or undulant fever, another disease of livestock transmissible to man, continues to

be a problem in Arkansas. The control of this disease is moving forward at a rapid pace because of the cooperative effort of the Federal Government and the Arkansas Livestock Sanitary Board through the Brucellosis Control Program which has been in progress for a number of years.

The Animal Disease Morbidity Report, which is regularly published by the Arkansas State Health Department each month, has been enthusiastically received throughout the United States and many foreign countries. The report provides a ready reference for all types and classes of livestock diseases, including poultry diseases. Many federal and state agencies have made use of this report in projecting control measures and research programs for diseases of livestock. The data contained in the report are obtained through the cooperative efforts of practicing veterinarians, the Animal Disease Eradication Division of the United States Department of Agriculture, the Arkansas Livestock Sanitary Board, and the Arkansas State Health Department.

Tuberculosis Control

During the year 1960, the Division of Tuberculosis Control has pinpointed areas of special need and concentrated work in these specific areas. The need to intensify services to the known tuberculosis patients and their family contacts is being stressed. To supplement these case finding activities there has been continued interest in the techniques of intradermal tuberculin testing. At the request of the local Medical Societies, public health personnel in 36 counties have been interested in these techniques and authorized to administer the tests.

Arkansas is one of a belt of states running across the mid-central United States that has a rate one-third higher than the U. S. rate. The state is ranked fifth highest in the United States as to tuberculosis morbidity and mortality. In view of these facts, consultation from the Tuberculosis Division of the Communicable Disease Center of the Public Health Service was requested.

Dr. Paul Pamplona and Miss Estelle Hunt from the Program Services Section of the Tuberculosis Program have made three visits into the State. Recommendations in the following areas were made: (1) Continue giving special emphasis to the known active tuberculosis patients and their family contacts. These patients need to be under continuous uninterrupted drug treatment. (2) Because of the need to concentrate services on the treatment and supervision of the known active tuberculosis patients and their contacts and suspects, mobile chest x-ray surveys should be carefully evaluated in terms of their productiveness. (3) It is suggested that the present regulation requiring that teachers and school employees receive a chest x-ray every two years be modified and that teachers and school employees be given a tuberculin test followed by a chest x-ray of the reactors. Non-reactors in the above group need only be tuberculin tested every two years; reactors to be x-rayed every two years to conform with state regulations. (4)

Tuberculin testing be limited to the first and ninth grades. Results of testing in these two grades would provide information about the level of infection and serve as a method of case finding among students and family associates of reactors. (5) A method of getting at the backlog of persons now classified as tuberculosis suspects should be established.

A total of 884 new cases were reported during the year; this is a morbidity rate of 48.9 per hundred thousand, and represents a four percent increase from the 1959 rate. There were 187 deaths from tuberculosis reported during the year; this is a mortality rate of 10.5 per hundred thousand and represents a seven percent increase from the 1959 rate.

Venereal Disease Control

The Arkansas State Health Department and the Division of Venereal Disease Control recognize the vital role of the private physicians in the State's syphilis control program. The increase in syphilis caseloads over the last five-year period has been accompanied by a shift of these caseloads from inadequate public clinics to private physicians. Arkansas physicians are for the first time reporting over half of the state's infectious syphilis morbidity.

The venereal disease control program has been expanded to include these physicians in order that the vital control technique of patient interviewing and contact tracing may be applied to each reported case. In addition, the Division continued to offer consultation and laboratory services to all physicians. These consultation services were also available to hospitals and military installations.

The Division provided direct services and consultation to local health departments in carrying out programs of selective blood testing in high prevalence areas, assisting in programs of public information, and in the maintenance of venereal disease records and reporting systems.

The lack of diagnostic and treatment services available for medically indigent persons continues to be a serious handicap to effective venereal disease control.

Maternal and Child Health

The Division personnel at the end of the year consisted of a Director, consultants in pediatrics, nutrition, maternal and child health nursing, child safety, hearing and vision, audiology, speech pathology, and speech therapy; part-time consultants in obstetrics, nutrition and dietetics; two psychologists (one of these part-time); a nursing consultant in mental retardation; a medical social worker; and a clerical staff of ten.

The Division operates a Hearing and Speech Center and a Special Project for Evaluation of Mentally Retarded Children; cooperates in a Special Project for Obstetric Education and Consultation in the University of Arkansas School of Medicine and in support of the Arkansas Council on Children and Youth.

The professional staff had major responsibility for organizing workshops in school health and

school safety and was active in numerous other workshops, institutes, teaching conferences, college lectures and programs of community organizations, radio, and television. For the University of Arkansas Medical Center, Maternal and Child Health Division staff members organized and took part in teaching the unit on public health for second year medical students, taught in the courses in public health for senior pharmacy students and nursing students, and taught in courses in obstetrics and in pediatrics for third year medical students. They also took part in orientation of newly-employed local health personnel.

Maternity Care

Maternity clinics were conducted by local physicians assisted by public health nurses in nineteen counties as part of the local health program for pre-and post-natal care of maternity patients, especially those expecting to use midwives. A total of 3,127 attended these clinics for an average of 3.14 visits each; 973 were given postpartum examinations within twelve weeks after delivery. Six of the clinics were used as teaching clinics for medical students, arranged by the Special Obstetric Project as a means of familiarizing the students with public health aspects of maternity care. A few maternity classes were conducted, on request of private physicians, for their patients.

Midwife Control

In the eight years since regulations were passed by the State Board of Health setting up standards for obtaining permits to practice midwifery and forbidding practice without a permit, the total number of active midwives dropped from 719 to 335, the fewest ever registered in the State. These 335 reported 3,802 deliveries, nine percent of total live births in 1959, also the lowest ever registered. Permits are issued annually by this Division over the signature of the State Health Officer on request of Medical Directors and public health nurses. All but 39 of the 335 active midwives had permits in 1959. These 39 reported 98 births. Monthly classes are held by the public health nurses in all counties with midwives. Midwives are required to attend the classes and to meet certain other requirements, including a physical examination.

Child Health

In 1959, 460 premature infants were served by public health nurses, with incubators loaned to 70 families. The nurses instruct and demonstrate to the family complete nursing care for these infants. Approximately seven percent of the infants born alive in the State last year were born prematurely. An Advisory Committee on Prematurity consisting of physicians representing the State Medical Society, the Academy of Pediatrics, and the Academy of General Practice, as well as the full-time Medical Directors of local health departments and part-time Health Officers, met for a one-day session this spring at the University of Arkansas Medical Center.

Well-child medical supervision was provided 5,149 children at well-child conferences in 25

counties. These were arranged by public health nurses and ordinarily held in the local units. Approximately one-half of the children examined in the conferences were under one year of age; 83 percent were under five.

Child Safety

Accidents are the leading cause of childhood deaths (ages 1-20) and account for more deaths between the ages of five and 20 than all other causes combined.

The Division has a full-time child safety consultant whose activities consist primarily of working to create public awareness of the problem of accidents as a cause of death and injury among Arkansas citizens, especially among children. Talks, demonstrations, lectures, films, and exhibits on home and child safety were presented before approximately 60 groups.

School

A total of 862 school-age children were seen in well-child medical conferences, with an additional 10,000 given public health nursing service. Another 3,345 were examined in the school health program in areas where a health department physician was available; 1,531 of these were examined with parent present. Other school health activities included 6,981 conferences between public health nurses and teachers (4,438 on matters relative to pupils and 2,543 relative to school problems).

Schools in every county in the state have conducted hearing or vision testing programs at some time since the program was initiated in 1948; all counties except two have had both programs. Health department personnel assist in community planning for these programs and teach and supervise volunteer workers who do the testing. This Division provides pure-tone audiometers and Massachusetts vision kits for conducting the tests and consultant service to local health units and schools.

In the 1959-60 school year, 50,756 were given hearing tests in forty-seven counties with 989 referred for medical attention; 75,241 were screened in vision testing programs in fifty-four counties, with 5,001 referred for medical attention.

Participation in two state-level joint committees continued, as did the organization and staffing of three workshops and a series of faculty institutes on health.

Nutrition Service

The fiscal year was marked by some increase in the nutrition service, in that one district nutritionist is full time, one three-fourth time, and one one-half time. Much of the work continues to be through the public health nurse and group work. Nutritional needs of the handicapped child were discussed at the Cerebral Palsy Institute this year. The material was used later by regional nutrition consultants in other states. The Arkansas Diet Manual is currently being revised, using suggestions from physicians and dietitians from hospitals in Arkansas.

Arkansas Children's Hearing and Speech Center

In June 1960 a speech pathologist, employed by Children's Hospital, and a speech therapist, were added to the staff. During 1960, 207 children received complete evaluations; 102 patients were seen for rechecks or counseling; and children were seen for 1,914 therapy sessions. Consultant services were furnished to Crippled Children's Division of the State Department of Public Welfare, and speech therapists attended selected Crippled Children's Clinics.

Mental Retardation Project

From May 1, 1959, to May 1, 1960, a total of 282 children were evaluated. Two hundred and eleven of these were full medical, psychological, and social evaluations. Seventy-one children were seen for partial evaluations, either medical, psychological, or psychological-social. Children are seen from all over the state. Referrals are accepted from physicians, local health units, Crippled Children's Division of the State Department of Public Welfare, child welfare workers, and parents. Applications are being received at approximately the rate children are being seen. At the present the Center is scheduled for appointments about two months in advance. Every effort is made to maintain close liaison with the patient's physician. Detailed summary reports are sent out after the evaluation, with parental permission.

In addition to evaluations the Center staff continues to work with local parents' groups and "trainable" classes toward development of further resources for retarded children. Communication is maintained with the Arkansas Children's Colony, the Child Guidance Clinic at the University of Arkansas Medical Center, and the State Hospital.

Public health personnel in the local health departments are offering more service to the mentally retarded child and his parents as more is learned and understood about these children. The nurses assisted parents in securing examinations through the Child Development Center and in planning and setting up home programs for 595 mentally retarded children in 1959.

Studies

Information is collected routinely for reports and studies on maternal deaths, neo-natal deaths, premature births and deaths, congenital malformations and birth injuries, non-fatal accidents, hearing and vision screening in the schools, and midwife activities.

Vital Statistics

Live births in the State continue to decline; the 41,214 registered in 1959 is the lowest since 1945 and more than 7,000 below the peak year of 1949. The decline is among white births entirely.

Infant deaths are decreasing slowly. Nine hundred and eighty-one infants under one year of age died in 1959 for an average of 23.8 per thousand live births; a decline of 1.5 per thousand from the preceding two years.

Prematurity continues as the leading cause of infant death.

A total of 25 maternal deaths occurred in 1959, for an average of six in every ten thousand live births. The average for the United States in 1957 (the latest available) was four on the same basis.

Heart Disease Control

The general public is becoming more cognizant of the high rate of deaths caused by blood vessel and heart accidents, diseases, and conditions. The public awareness has been brought about through the combined cooperative efforts of the Arkansas Heart Association, the Department of Cardiology of the University of Arkansas School of Medicine, the Arkansas State Health Department, local Medical Societies, and interested civic organizations. These efforts have been directed chiefly toward public education, community services, and physician education. This desired reaction has brought about a definite increase of interest on the part of the general public in further supporting research in heart and blood vessel diseases, preventive measures, diagnosis, treatment, surgical techniques, etc. All of these factors have shown marked advances during the past few years. It is not at all unlikely that within the near future, through rapidly expanding effort in research, that startling discoveries will be made and even greater surgical techniques developed.

The previously established diagnostic and treatment heart clinics in the state are still functioning, and three additional communities are interested in establishing clinics. Each year these clinics show an increased patient referral load. During the year, 1,226 cardiac patients were diagnosed and many treated in these clinics; more than 8,500 individuals were examined as referral suspects; 7,114 electrocardiograms were completed, along with more than 350 other complicated tests and studies.

This Department assists financially and otherwise in the support of the clinics. Federal grant-in-aid heart disease control funds allocated to the State are used in part to assist and support the cardiac teaching clinic at the University of Arkansas School of Medicine. The staff of the clinic conducts postgraduate courses in the techniques of electrocardiogram interpretation, and more than 150 physicians in the State have completed this course. Those physicians that have attended the course are very enthusiastic about it.

Approved and accepted educational materials such as pamphlets, films, and booklets are provided by the Division to authorized organizations, civic groups, agencies and certain individuals on request. During the year several talks by staff members were made to especially interested civic groups and organizations.

Mental Hygiene

The Mental Hygiene Division is concerned with the development of a State-wide community mental health program. During the past ten years this Division has spent its Federal funds in helping to support the outpatient clinics at the Medical School, providing educational scholar-

ships, and in the purchase of films and pamphlets. Last year a clinical psychologist was employed on a full-time basis to assist the Acting Director in the development of a program. A consulting psychiatrist has been employed on a part-time basis. It is hoped that within the next year a psychiatric social worker and mental health nursing consultant can be employed.

Sebastian County now has in operation at Fort Smith a mental health center which is partially supported by funds from this Division. There are a number of other areas in the state which have demonstrated an interest in beginning some type of mental health facility. At the present time the only funds available to the Division are Federal funds, which fact severely limits the amount of participation our Division can offer to help support a mental health facility. It is hoped that the State will assume some responsibility in this regard.

Other services during the past year have included a number of workshops for teachers, ministers, and nurses, the purchase of test materials to be used by colleges in screening children for special classes and of films which are circulated through the library in the Division of Public Health Education.

Public Health Nursing

There are 124 nurses employed by the State Health Department in the following positions: (State Office) 1 director and 2 consultants—1 generalized and 1 maternal and child health (field personnel); 5 supervisors, 3 senior public health nurses, and 113 staff nurses.

Public health nurses were placed in three counties which had been without nursing services for several years. There are fourteen counties without nursing service and forty counties with only one public health nurse.

The supervisory staff made 544 visits to public health nurses. They attended workshops on Care of the Cerebral Palsy, School Safety, Mental Health, and a Venereal Disease Seminar.

The in-service program was continued with our in-service conferences of one day each held in nine areas of the State, making it possible for all of the nurses to attend.

The Division of Public Health Nursing worked with the other Divisions in planning for the activities of their programs and in supervising the local nurses in carrying out these activities.

Dental Health

Due to the resignation of the Director in 1959, the Division had no full-time Director until the first of May 1960. During the interim, activities in dental public health were guided by a part-time Director. On May 1, 1960, a new full-time Director took over the administration of the Division of Dental Health. Under the new Director, existing activities in all four program areas of dental public health—research, education, prevention, and care—have been extended, and new program activities have been added. It is expected to initiate new program activities in all areas of dental public health as soon as additional means, staff, and equipment become available.

Sanitary Engineering

The estimated cost of water works improvements during the year approximated \$6,000,000. The 236 public water supplies now serve a population of 885,000, or approximately 50 per cent of the total population of the State.

Sewerage improvements estimated at \$8,500,000 were constructed during 1960, serving a population of 750,000 people within the state.

Twenty-nine swimming pools were constructed during the year, bringing the total to 230 swimming pools under the supervision of this Department. A comprehensive swimming pool operator's manual was prepared and printed for distribution to pool operators throughout the state.

The Plumbing Division licensed a total of 1,008 master plumbers, 941 journeymen, and 295 apprentices. All inspection reports indicate a high-quality of plumbing installations throughout the State. These were accomplished through an educational program conducted at one Statewide school and four district schools.

The Dairy Products Division completed 642 inspections, supervised the issuance of 863 licenses, and condemned 10,311 pounds of milk because of sediment and 5,269 pounds of milk because of water added. During 1960 the Food, Drug, and Milk Control Division prosecuted 30 cases, 21 of which resulted from the violation of state drug laws, eight cases pertaining to food violations, and one case involving an insecticide dispenser. Favorable decisions were obtained from all cases except the latter.

During the year 307,367 pounds of foods, drugs, and cosmetics were found to be misbranded, adulterated, or otherwise in violation of the state laws.

Considerable time was spent revising meat regulations, particularly those relating to sausages and processed meats.

The major milk sheds during 1960 converted from handling milk in cans to bulk tank operation.

Laboratories

The Bureau of Laboratories performed 323,822 examinations of various kinds during the year. Approximately 90 percent of these examinations were directly related to the control of communicable diseases in the state—either as a result of programs in the Divisions of Tuberculosis Control, Venereal Disease Control, and Communicable Disease Control or by giving direct diagnostic assistance to the physicians of the State. Examinations of water, milk, food, and drugs represented the remainder of the laboratory examinations and were made in connection with the programs in the Bureau of Sanitary Engineering to improve environmental sanitation.

Cultures of the typhoid bacillus from both cases and carriers are now being phage-typed routinely. Typing and virulence tests are also being done on all isolations of diphtheria organisms. We urge the physicians to submit without delay specimens for culture on all suspected cases of these diseases in order that this information will be available to aid in the search for sources of infection.

REPORT OF THE COUNCIL

Joe Verser, Chairman

The Council of the Arkansas Medical Society met on April 20th, 1960, and elected Joe Verser as chairman and Alfred Kahn of Little Rock as editor of the Journal of the Arkansas Medical Society. It referred a suggestion that the Public Relations Committee be designated as the sole authority for submitting news releases or other information to the news media to the Public Relations Committee for its consideration.

The Executive Committee of the Council met by telephone conference on August 12th and approved expenses for a layman to attend a legislative meeting in Kansas City, August 18th.

The Council met on October 23rd and transacted business as follows:

- I. Approved a new contract for Blue Cross-Blue Shield coverage of the general population of Arkansas.
- II. Referred a request by the Arkansas Dental Association for dental coverage under Blue Cross-Blue Shield to the professional members of the Blue Cross-Blue Shield Board.
- III. Referred the Arkansas State Nurses Association to the Society attorney for an opinion regarding the intravenous administration of fluids by nurses.
- IV. Referred to the Committee on Public Health a request from the American Diabetes Association for the formation of a committee on Diabetes.
- V. Approved a news release urging the early implementation of the Mills-Kerr Bill in Arkansas.
- VI. Approved a report of the Committee on Liaison with the Welfare Department recommending that:
 1. A study be made to learn the number of people receiving welfare assistance, the number of cases treated as charity cases by hospitals and by doctors (not including bad debts and welfare clients);
 2. The Committee's assignment be clarified by the Council;
 3. The Society approve the Welfare Department administering the new Federal Medical and Hospital Program (Mills Bill);
 4. Pending further study and clarification of availability of funds, that physicians' services to the welfare patients be continued as at present, i.e., without charge to the government.
- VII. Voted to request Medicare officials in Washington to submit the new contract immediately after the first of the year. It was also decided to distribute the Medicare fee schedule to all Arkansas physicians;
- VIII. Decided not to send additional representatives to the White House Conference on Aging aside from the three physicians on the Governor's Commission. The Council agreed to underwrite expenses of those three members attending in excess of \$200 per member;
- IX. Voted to suggest to the budget committee that it consider increasing the salary of the Executive Secretary and make recommendations to the Council at its next meeting;
- X. Voted to request the editor to publish in the Journal the talk of Dr. Carroll Witten presented at the American Academy of General Practice meeting.

The Council met on December 18th and transacted the following business:

- I. Voted its approval and support of a program of education through the extension division of the University of Arkansas for medical assistants;
- II. Voted to increase the executive secretary's salary in accordance with the budget committee report;
- III. Approved the Claims Managers Council's recommendation that the rules of the Arkansas State Arbitration Commission be amended to read: "An agreed compromise to a dispute is morally binding upon the doctor and insurance carrier unless obtained by misrepresentation or fraud";
- IV. Voted to renew the Medicare contract and gave Dr. Louis Hundley, chairman of the Negotiating Committee, authority to try to change the contract according to recommendations of the Arkansas anesthesiologists;
- V. Decided to defer action on reactivation of the Prairie County Medical Society;
- VI. Voted to pay the expenses of the society attorney to a regional AMA legislative conference.
- VII. Voted to request the Committee on Rehabilitation to meet with the head of the Hot Springs Rehabilitation Center and offer its assistance to him;
- VIII. Heard the Committee on Liaison with the Welfare Department reverse its previous recommendation and report that they thought it best that Arkansas physicians accept pay for professional care for those recipients of medical assistance for the aged under the Mills-Kerr Bill who are not Old Age Assistance clients. A \$5 unit value applied to the California Relative Value Study was recommended as the basis of a fee schedule for the program. The Council voted to refer the matter to the House of Delegates without recommendation. (This matter was considered at the special meeting of the House of Delegates December 18th and the House voted to participate in the program as a Society to the fullest extent and to accept professional fees. The fee schedule to be decided upon at a later date.)

EXECUTIVE SECRETARY'S REPORT

Mr. Paul C. Schaefer

The new program of investment of Medical Society funds in short-term government securities is working well. Over one hundred dollars per month was realized during the time the program was in operation in 1960. It is anticipated that this return can be substantially increased during 1961. The policy was put into effect upon order of the Council during the 1960 Annual Session. The income is realized at no risk or expense to the Society. By investing in short-term government notes, the amount of cash committed can be planned so as to always have sufficient funds available for operations of the Society and still keep every bit of idle money earning an income. Such an operation is necessary because the bulk of the Society's income is in the first quarter of the year while the expendi-

tures are spread uniformly throughout the year, resulting in excess funds in the early part of the fiscal period which, though temporarily not needed, must be kept readily accessible.

Nineteen hundred and sixty-one dues include \$5.00 per member ear-marked for the Medical Education Foundation for Arkansas. This money is deposited in a separate bank account and will be used according to the purposes of the Foundation as set out in its charter and upon the direction of its Board of Trustees. Donations of cash or other valuable assets to the Foundation are tax deductible and the tax advantages of such giving merit the investigation of anyone interested in medicine. Inquiries should be directed to the Society's Executive Secretary.

Medical Society work grows increasingly important as efforts multiply to place the profession under control. The Society headquarters solicits the suggestions and help of every member.

Medicine and Politics

FOUNT RICHARDSON, M.D.

If there is a doctor left in these United States who does not see the need for physicians to interest themselves in politics than we herewith offer our apologies and at the same time our condolences. Laws are being proposed at the 1959-60 rate of better than two-a-day that would in some way affect the lives and methods of those who bring health to the people. Some of these laws are good, some bad. We simply must be alert to what is happening to us in our Legislative halls.

Fortunately, there is a conservative group in our national Congress that has slowed the pace which ran rampant in the 40's and 50's to change our form of government from a democracy based on a Constitution to the Dictatorship of a welfare state where we go to the polls, on occasion, to vote ourselves new money to take care of us. History records the graves of governments and empires which have succumbed to the "promisin' Johns" who assure us that all we need to live off the government is to put them in office.

Medicine and medical doctors are not interested in the "status quo." They are, however, interested in maintaining a climate where free men can practice medicine and bring health and comfort to the people both as a body and as individuals. They are also interested in being able to keep abreast of the scientific discoveries of our day, and to apply them to medicine. This signifies that a physician must have some leisure, and the means of supplementing his knowledge, through a life of practice.

Our present system of government which allows a man to practice in a free world and without government subsidy, is the best means to that end, that has yet been devised. Yet there are lawmakers in our National Congress who would com-

munize the profession with a system of state medicine, and deny to the American people the rights of keeping or dismissing the physician of their choice. A coalition of Southern Democrats and conservatives from the North has been the only deterrent to such radical legislation. This coalition has, from time to time, suffered both defeats and victories.

Arkansas is blessed with a group of legislators in the National Congress that has voted, for the most part, to stem this tide of Statism. Changes to the socialist state have, as a rule, been supported by those candidates from the large metropolitan centers in the North. These supporters came from the ranks of both the Democrats and the Republicans.

Our state's representatives in Washington need to be assured that the physicians of Arkansas appreciate the stand they showed on the Mills bill. We must alert them that there will be legislation in the coming Congress, which would force the physicians into government service. Our contacts are important and the physician must make the approach. Our Washington representatives have been and will be under pressure, for drastic changes in our government. All these changes will be sold to an unsuspecting public under the guise that "you get it for nothing."

Every physician must take an interest in local politics and in our office holders, local and state. These elected men hold our opinions in high regard, and we must use our influence, not selfishly, but to maintain an orderly atmosphere of freedom and free choice for all peoples in all professions and indeed, in all undertakings.

Write our representatives and our senators and thank them for their part in keeping America free.

MEDICINE IN THE NEWS

From the Association of American Medical Colleges A.M.A. to Aid Students

In an attempt to alleviate the serious decline in the number and quality of applicants to medical schools, the American Medical Association's House of Delegates, at its recent meeting in Washington, D. C., unanimously approved a student honors program and a student loan program, drawn up by the Council on Medical Education and Hospitals.

Both programs are designed to increase the recruitment of well qualified students into medicine—the honors program, to attract able students to prepare for admission to medical school, and to assist those outstanding students who are financially unable to pursue a medical education; the student loan program to encourage career decisions in favor of medicine by creating a "central security fund" which would be used to endorse or co-sign personal long-term loans at moderate interest to recommended students. The loans would be made by local banks or other lending institutions.

The student honors program will name about 250 outstanding college students as AMA scholars each year. Approximately fifty of these each year would receive \$1,000 per year for four years, payable when they enter medical school.

From The Association of American Medical Colleges:

Foreign Doctors Get Reprieve

A special educational program has been proposed to help nearly 2,500 foreign physicians who face deportation because they failed to pass the recent ECFMG test, thus averting an international crisis by a sudden forced exodus.

The program, which will not involve patient care, is being developed by the American Medical Association, the American Hospital Association, and the Association of American Medical Colleges.

The proposal provides that foreign physicians assigned as staff physicians, resi-

dents, or interns can take part in such a program offered in American hospitals until June 30, 1961. This will permit the U. S. Immigration and Naturalization Service to extend the educational exchange visas of these foreign doctors and enable them to take the ECFMG test again next April 4.

Details of the educational program will be worked out by each individual hospital in order to conform to the specific educational needs of the foreign doctors.

Hereafter, foreign doctors who seek training as interns and residents in this country under the exchange program, must pass examinations in their own countries before coming to the United States.

More than 70 per cent of the foreign physicians who took the last ECFMG examination in September passed it.

Health Research Grants

Dr. Leroy E. Burney, Surgeon General of the Public Health Service, announced today the award of 26 Health Research Facilities grants, totaling \$6,670,880, to 24 institutions in 15 states.

The November awards complete the distribution of fiscal year 1961 funds.

Established as a three-year program in 1956, the Health Research Facilities Program awards funds on a matching basis to public and private nonprofit hospitals, medical and dental schools, schools of public health, and other research institutions. Because of the continuing need for expansion and improvement of the Nation's facilities for medical research, the program was extended for an additional three years, through fiscal year 1962.

Including grants announced today, the Health Research Facilities Program, in its five years of existence, has awarded 756 grants, totaling \$149,991,729, to 321 institutions in 47 States, the District of Columbia, and Puerto Rico.

This program is administered by the Division of Research Grants of the National Institutes of Health. Recommendations for grants are made by the Health Research Facilities National Advisory Council to the Surgeon General of the Public Health Service, who approves the grants.

**From Washington Office
American Medical Assn.
The Month in Washington**

Spokesmen for the medical profession at the White House Conference on Aging supported the Kerr-Mills voluntary program for health care of elderly persons as an efficient, economical way to furnish assistance to those who need help.

Leading physician delegates to the Conference also continued vigorous opposition to the Social Security approach espoused by organized labor.

Continuing their all-out campaign for the Social Security approach, labor union leaders used the Conference as a forum for further attacks on the medical profession.

Dr. J. Lafe Ludwig of Los Angeles, Chairman of the American Medical Association Council on Medical Service told a pre-Conference meeting of the physician delegates that it would be a "national tragedy—unfair to old and young alike—if the Kerr-Mills law should be shelved for a Social Security plan for medical care of the aged.

"Federal medicine would mean red tape, bureaucratic control, and high costs," Dr. Ludwig said. "Most important of all, it would mean inferior medical care for the people whom we are trying to help."

Describing the Kerr-Mills law as a "historic milestone," Dr. Ludwig said the "overwhelming majority" of the nation's physicians believe it is "an excellent law which can and will work and deserves every opportunity to do so."

In a statement issued in Chicago, Dr. E. Vincent Askey of Los Angeles, President of AMA, branded as false an allegation that the White House Conference had been "captured" by organized medicine, private insurance and business interests. Dr. Askey specifically referred to such a charge made by Prof. Wilbur J. Cohen of the University of Michigan but the AMA president's statement applied to similar charges made by representatives of organized labor.

Dr. Askey implied that, "if anyone has a legitimate complaint regarding the choice of personnel directing the activi-

ties" of the key section on income maintenance, it was opponents of the Social Security approach.

Dr. Ludwig also answered organized labor's attacks on the AMA at the Conference. Dr. Ludwig accused George Meany, president of the AFL-CIO, of "attempting to undermine" the Conference to "further his own partisan interests."

"Meany obviously is prepared to go to any extreme to impugn the motives of those who disagree with him," Dr. Ludwig said. "Delegates to this conference representing medicine and many other groups came here in a spirit of cooperation determined to take realistic action to help the elder citizens of this country.

"Meany, through his campaign of smear and hostility, is making this difficult, if not impossible.

Dr. Ludwig said that some labor leaders "obviously are more interested in saddling the people of this country with a system of socialized medicine" than he is in "helping those older people who really need help."

"Meany and such of his cohorts as Sen. Pat McNamara (D., Mich.) appear to be doing their utmost to create so much confusion that recommendations of the State Conference on Aging will be forgotten," Dr. Ludwig said.

"Of the 30 states making specific recommendations regarding financing of medical care for the aged, only 10 favored the Social Security tax."

President John F. Kennedy declined an invitation to address the Conference as President-elect. He and Congressional Democratic leaders decided weeks before the Conference to make medical care for the aged under Social Security an Administration priority bill for early submission to Congress.

But some key Democrats in Congress announced they would not go along with President Kennedy on the issue. Sen. Robert S. Kerr (D., Okla.), co-author of the medical-care-for-the-aged program approved by Congress last year, said it should be financed by a general tax—"not a limited tax like Social Security."

Similar opposition to the Social Security approach was expressed by Sen. John

FEATURES

J. Sparkman (D., Ala.). Chairman Harry F. Byrd (D., Va.) of the Senate Finance Committee earlier had said he was convinced that providing medical care for the aged under Social Security would lead to socialized medicine and possibly bankrupt the Social Security trust fund.

Despite the Kennedy Administration's espousal of the Social Security plan, the AMA pledged its continued cooperation to the Department of Health, Education and Welfare on other health programs.

The AMA officials advised that they would help implement the Kerr-Mills law in any way possible.

FULL-TIME PHYSICIAN FACULTY BY SCHOOL OF GRADUATION

National attention is focused on the problem of providing an adequate supply of physicians to meet the needs of a rapidly expanding population. Pressures are being exerted from many sides to stimulate an immediate increase in the number of medical school graduates so as to prevent critical shortages of doctors over the coming decade.

Table I

Authorized and Budgeted But Unfilled Full-Time Faculty Positions in U. S. Medical Schools

Academic Year	Total Number of Unfilled Authorized & Budgeted Full-Time Positions	Total Number Full-Time Positions Offered (Filled & Unfilled Though Budgeted)	Vacancies as Percent of Full-Time Positions Offered
1950-51	279	4,212(1)	6.6%
1951-52	235		
1952-53	195		
1953-54	283		
1954-55	258		
1955-56	251		
1956-57	331		
1957-58	619		
1958-59	655		
1959-60	851	11,319	7.5%

Source: Education Numbers of JAMA for appropriate years.

- (1) 3,933 full-time teaching positions reported filled as of Feb. 1, 1951 by Diehl, et al., "Medical School Faculties in the National Emergency," Vol. 27. p. 233-243 (July) 1952.

Less attention is directed to an equally pressing problem, one which is intimately related to the first, namely, provision of an adequate supply of teaching personnel to staff the medical faculties. To stimulate any significant increase in student enrollments without providing a correlated increase in medical faculties would not be in the ultimate interests of medical education. The forward effort toward a solution of each of these problems must be timed to move in unison.

For the academic year 1959-60, eight hundred and fifty-one budgeted full-time faculty positions were unfilled. The number of unfilled positions has increased annually since 1955-56 when 251 positions were reported vacant. The anticipated increase in funds for medical research will augment the demand for full-time teachers and investigators and portends an academic deficit of considerable dimension so far as actual numbers are concerned. During this same period, however, the percentage of vacancies relative to the total number of full-time positions offered, has not changed very much, i.e. 6.6% in 1950-51 compared with 7.5% in 1959-60. (See Table 1.)

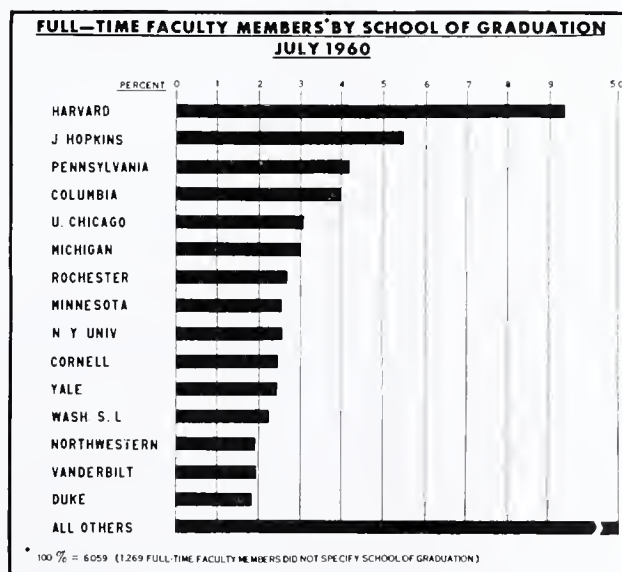


Fig. 1

Traditionally certain schools have placed more emphasis than others on the training of teachers. Current data on the relative standing of teacher-training institutions is shown in Figure 1. By a standard of measurement which is based on total numbers alone and which favors the older and larger schools, Harvard ranks first, Johns Hopkins second and Pennsylvania third, etc.

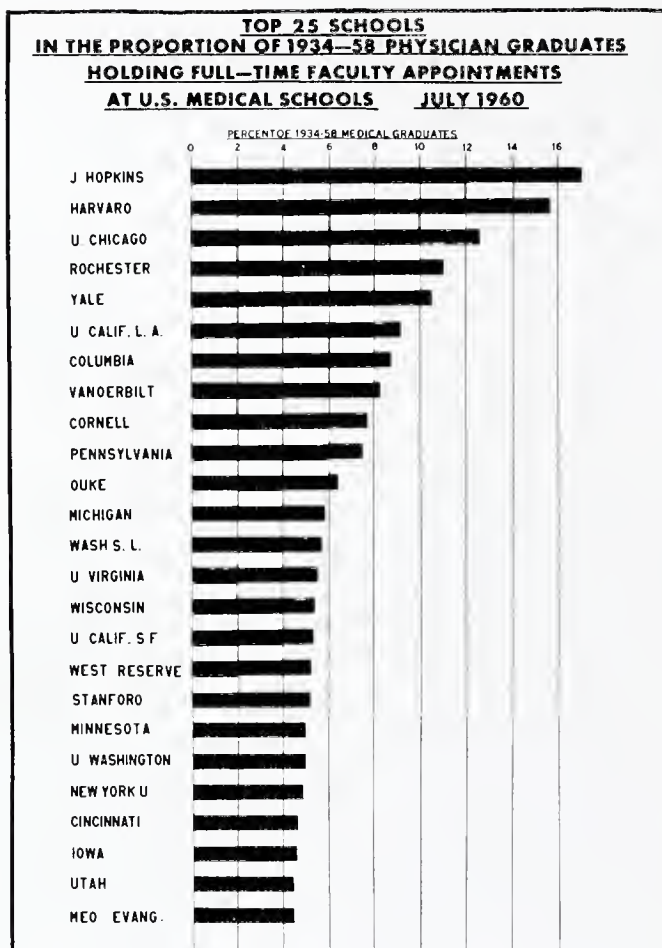


Fig. 2

When only the more recent graduates are considered a different rank order is obtained (See Figure 2). Here the standard of measurement is the percentage of 1934-58 physician graduates holding full-time faculty appointments. By this criterion the contribution of the newer and smaller medical schools may be recognized.

Answer to What Is Your Diagnosis?

CLINICAL DATA:

3 year old white female. Fever, sore throat and cough for 8 weeks. Two pound weight loss. Palpable spleen.

ANSWER—Pulmonary and hilar histoplasmosis. Histoplasmin skin test positive at 1:1000 dilution.

X-RAY FEATURES: There is bilateral hilar lymph node enlargement. On the first film there is slight streaky infiltrate radiating from both hilar areas and on the second film this infiltrate has cleared and the nodes are more sharply outlined. There is a small amount of calcium deposited in the center of several of the nodes.

Hospital Use in U. S. Dips to 1940 Level:

The annual use of hospital care by the nation's population has declined to the 1940 level of 2.8 days a person, the Health Insurance Institute has reported.

The average number of days each American spent in general and special hospitals, mental hospitals, and special tuberculosis hospitals was the same in 1959 as in 1940, down after a peak of 3.9 days a person in the wartime year of 1945, and an average of 3.1 days a person in 1951, 1952 and 1953, the Institute stated.

In 1940 there were 74 admissions to general and special hospitals for each 1,000 persons in the population compared to 130 admissions in 1959, said the Institute.

However, advances in medical science helped reduce the lengths of stay in these hospitals from an average of 13.7 days in 1940 to 9.6 days in 1959. This decrease was the leading reason why the number of days in all hospitals for each 1,000 persons in the population declined from 2,839 days in 1940 to 2,811 days in 1959.

The HII said the reduction in the length of hospital stays played a key role in keeping the demand for hospital services within manageable bounds.

In 1940, less than two of the 76 admissions per 1,000 population were to mental hospitals but 1,634 of the 2,839 days of hospital stay were in such hospitals. The HII said there was a similar proportion of admissions and patient days in 1959.

Medical science affected a great reduction in days in tuberculosis hospitals, from 185 days per 1,000 persons in 1940 to 104 days in 1959.

From Health Insurance Institute

Social Security

One of the anomalies in federal policy toward the aged has been that while the government urged employment of more older men and women, the Social Security program was penalizing them, in the form of reduced benefits, for engaging in gainful activity. Now, effective January 1, 1961, an estimated 500,000 families collecting social security benefits will be permitted to earn more without losing all their checks.

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Under legislation adopted in the last congressional session, the earnings limitation for oldsters, so to speak, has been liberalized so that those retired under 72 years of age will have 50 cents in benefits withheld for every \$1 of earnings between \$1,200 and \$1,500 per year, and \$1 withheld for every \$1 in earnings in excess of \$1,500 per year. The old rule was that one monthly benefit check was withheld for each \$80 of earnings above \$1,200 per year. Those retired at 72 can now earn any amount without suffering deductions.

Henceforth, a man drawing the maximum retirement benefit of \$120 a month can earn \$2,790 a year on the outside without losing all his payments from social security for the year. If he has a non-working wife also on social security, some benefits would be paid if his earnings for the year were under \$3,510. As in the past, benefits will not be withheld for any one month in which earnings are \$100 or less.

The total added cost of the new social security provisions is about \$40-million annually.

With this, I cannot see any reason for the proposed compulsory pre-paid hospitalization and medical aid for the people of this country through the social security agency. Voluntary programs certainly are best and private enterprise remains the backbone of American structure.

Reprint from OFF THE CUFF in the Alva (Okla.) Review-Courier

From the U. S. Department of Health, Education, and Welfare: Food and Drug Laws Clarified

The Food and Drug Administration has amended its new regulations requiring changes in labeling used to promote the sale of prescription drugs to physicians. At the same time the Agency extended to February 7, 1961, the effective date of those parts of the regulations previously scheduled to become effective on January 8, 1961. These regulations were published in the Federal Register on December 9, 1960.

Time extensions also have been granted for compliance with certain parts of the regulations scheduled to have become effective on March 9, 1961.

As amended, the regulations will extend the March 9, 1961, date and make these other changes:

1. Permit the use until January 1, 1962, of labels already printed even though they do not contain all the information required in the order published in the Federal Register on December 9, 1960, if the information is elsewhere on the package or in a brochure enclosed in that package.

2. Permit until June 6, 1961, the marketing of drugs already packaged without code or control number on the carton if this number is on the label.

3. Provide for continued use until January 1, 1962, of catalogs and price lists which have some information (but not full disclosure) if sent only to pharmacists and wholesale druggists, and not to medical practitioners.

Where declaration of inactive ingredients is required, flavorings, perfumes and colors may be listed as such, without naming each specifically. Trace amounts of harmless substances used only for individual product identification need no declarations on labels.

In the case of parenterals, water for injection as a vehicle need not be declared under the clarifying regulations. A substance added to make the solution isotonic or to adjust the acidity or alkalinity need only be listed by name and effect, without stating the percentage.

The regulations also were amended to make it clear that no package insert is required solely because the label bears the dosage information called for in another section. Mr. John L. Harvey, Deputy Commissioner of Food and Drugs, said that the basic question as to required package inserts is being considered in the light of all comments submitted in response to an earlier proposal published in the Federal Register July 22, 1960. Time for submitted comments expired December 22, 1960.

DATES TO REMEMBER

Annual session, Arkansas Medical Society,
Little Rock, Arkansas _____ April 16-19, 1961

FEATURES

1961 Annual Meeting
A M A, New York,
N. Y. ----- June 26-30, 1961

Annual Meeting, Arkan-
sas Academy of Gen-
eral Practice, Little
Rock, Arkansas ----- Oct. 11-12, 1961

1961 Clinical Meeting
AMA, Denver, Colo-
rado ----- Nov. 27-30, 1961

ANNOUNCEMENTS

The Fifth Post-Graduate Course on Fractures and Other Trauma sponsored by the Chicago Committee on Trauma of the American College of Surgeons will be held April 19, 20, 21 and 22, 1961 at the John B. Murphy Memorial Auditorium, 50 East Erie Street, Chicago. For further information inquiries should be addressed to Dr. John J. Fahey, Chairman, 1791 W. Howard Street, Chicago 26, Illinois.

The property belonging to the estate of the late Dr. I. H. Jewell of Paris, Arkansas will be sold to the highest bidder, according to information received from E. V. Jewell, administrator of the estate. The property includes the infirmary building, furniture, equipment, real estate, dwelling house, etc. The appraisal list can be seen at the office of Probate Court Clerk in Paris or at the office of Mr. George A. Hall, attorney for the administrator.

Obituary

Dr. H. O. Walker, Newport, died December 14, 1960 at the age of 82 years. He was born at Jacksonport and educated in Jackson County Schools. He received his doctor of medicine degree at Washington University in St. Louis, and practiced medicine in Newport for more than 50 years before his retirement two years ago. He was active in civic work in his

community. He is survived by his widow, Mrs. Maggie Jo Walker; a daughter, Mrs. R. M. Saxon and a granddaughter of Little Rock.

PERSONAL AND NEWS ITEMS

Dr. W. T. Dungan of Little Rock, has been elected a fellow of the American Academy of Pediatrics.

Dr. Fount Richardson, Fayetteville, has been named chief of staff at City Hospital, replacing **Dr. Warren Murray** who became a member of the Executive Committee. **Dr. Jeff Baggett** was elected vice chief of staff, and **Dr. Arthur Moore**, secretary-treasurer.

Dr. Gerard J. Bensberg, Jr., assistant director of mental hygiene, State Board of Health, Little Rock, was the principal speaker at a meeting of the Northeast Arkansas Association for Retarded Children on December 15, 1960 at Jonesboro.

Dr. H. M. Fogo, Harrison, was elected chief of staff for 1961 at the annual meeting of the Boone County Hospital Medical Staff. Other officers include **Dr. William P. Barron**, vice chief of staff; **Dr. Van Smith**, secretary-treasurer. **Dr. G. Allen Robinson** was elected director of the Northwest Arkansas Tumor Clinic and **Dr. Rhys Williams**, assistant director for the clinic.

The Boone County Medical Society elected **Dr. Kenneth A. Siler** president and **Dr. Rhys Williams**, secretary-treasurer.

Dr. Gilbert O. Dean has been named chief of professional staff at St. Vincent's Infirmary, Little Rock, and **Dr. James Morrison**, secretary and **Dr. Sam B. Thompson**, chief of staff-elect. The officers are elected by secret ballot of the hospital staff.

Dr. W. E. Knight, an orthopedic surgeon of Fort Smith, is one of 18 American doctors who have spent hundreds of hours and thousands of dollars during the

past year to aid the cripples of Jordan. The surgeons have given up their practice in the United States for a month each; have taken money out of their pockets, and have traveled across the world to help thousands stricken with bone and joint tuberculosis, infections, polio and deformities.

Prior to the doctors' trips abroad, Jordanian hospitals lacked equipment to help the crippled. Since then, American supply houses have donated \$50,000 worth of equipment to the program; drug firms have been just as generous, Dr. Knight said.

The American doctors have no government connection, no formal organization, and really not even a fixed program. Since August, 1959 the doctors have been shuttling back and forth between the United States and Jordan, staying overseas a month at a time. This volunteer program in Jordan is a project of the Orthopedics Letters Club, which Dr. Knight himself founded in 1948. The Club decided at its 1958 convention to help some Eastern country after one of its members reported on the lack of bone surgeons in that part of the world.

Dr. T. D. Robinson of Atkins has been elected chief of the medical staff at St. Anthony's Hospital at Morrilton. Other members of the staff are **Drs. H. E. Mobley, J. E. Mobley, Harold Hyder, G. B. Owens, Tom Hickey** and **Charles Wells**, all of Morrilton.

Dr. Wayne Taylor will join **Dr. T. N. Rodman** at Leachville in the operation of Rodman's Clinic during the coming summer. Dr. Taylor is a graduate of the University of Arkansas School of Medicine.

Dr. Charles E. Thompson, a clinical psychologist and civic leader in North Little Rock was transferred from the Veterans Administration Hospital in North Little Rock in December to become chief of the Clinical Psychology Service in the regional office of the Veterans Administration at Louisville, Kentucky.

Dr. W. J. Lee has been elected president of the Stamps, Arkansas Chamber of Commerce.

Dr. G. N. Pierce, Medical Director of the State Tuberculosis Sanatorium at Booneville made a very interesting and informative talk to the Paris Kiwanis Club on December 20. He gave a brief summary on the advancement in the treatment of tuberculosis since 1940. He also stated that Arkansas has one of the best rehabilitation programs of any state in the country.

Dr. David W. Sinton of the Albany, New York Medical College has been named head of the division of neurology at the University of Arkansas Medical Center. The appointment is effective April 1. Dr. Sinton graduated from Colorado Medical School in 1947 and took residency training at the University of Iowa School of Medicine.

Contributors to the American Medical Education Foundation from the State of Arkansas during December 1960:

Dr. Eldon Fairley, Osceola	\$ 50.00
Dr. Julian Fairley, Osceola	50.00
Dr. E. M. Gray, Mtn. Home	50.00
Dr. John T. Gray, Jonesboro	10.00
Dr. R. A. Irwin, Jr., Pine Bluff ...	50.00
Dr. M. A. Jackson, Little Rock ...	25.00
Dr. J. F. Kelsey, Fort Smith	100.00
Dr. J. H. McCurry, Cash	25.00
Dr. Guy U. Robinson, Dumas	150.00
Dr. Wm. A. Snodgrass, Jr., L. R. ...	10.00
Dr. Ewell I. Thompson, L. R.	10.00
Dr. H. King Wade, Jr., Hot Springs	25.00
Dr. H. King Wade, Sr., Hot Springs	25.00
Dr. Charles L. Weber, Magnolia ..	10.00
	<hr/>
	\$590.00

Proceedings of Societies

Dr. Milton Deneke, West Memphis, has been renamed as chief of staff of Crittenden Memorial Hospital and as president of the Crittenden County Medical Society. Dr. Deneke will be serving his second term as head of both groups. Other officers re-elected by the hospital staff were **Dr. Herbert Taylor**, vice chief of staff, and **Dr. David H. James, Jr.**, secretary.

FEATURES

Dr. James also was re-elected as vice president of the county's medical society and Dr. James R. Fall was renamed as secretary for the society.

The annual meeting of the two groups was held at Crittenden Memorial Hospital.

At the recent meeting of the Baxter County Medical Society Dr. Walter S. Guinee was elected president, Dr. John F. Guenthner vice president and Dr. Ben N. Saltzman secretary. Dr. Saltzman was elected as a delegate to the state convention and Dr. E. M. Gray was elected alternate delegate. The meeting was held in the home of Dr. and Mrs. Saltzman in Mountain Home.

Dr. John D. Wise was elected president of the Hot Springs County Medical Society at a meeting December 13.

Other officers named were Dr. C. F. Peters, vice president; and Dr. John W. Cole, secretary-treasurer.

Dr. Charles Weber has been elected 1961 president of the Columbia County Medical Society. Other officers elected were Dr. Jack Walker, vice president, and Dr. John Ruff, secretary-treasurer. Dr. Paul Sizemore was named delegate to the state Medical Society convention. As president of the society, Dr. Weber will also act as chief of staff at Magnolia City Hospital. Dr. H. Blake Crow was named chief of surgery; Dr. Charles Kelley, chief of obstetrics; and Dr. Fred Lee, chief of the medicine service.

Seven physicians, whose work through the years has brought honor and distinction to the Hot Springs-Garland County Medical Society, were honored January 13 by that organization, one of them posthumously. Certificates were presented to Dr. Albert H. Tribble, Dr. H. Clay Chennault, Dr. Gaston A. Hebert, Dr. W. E. Gray, Dr. Euclid M. Smith, Dr. H. King Wade, Sr. and Dr. George B. Fletcher. Dr. Fletcher died during the past year and his wife received his award.

The officers for the Hot Springs-Garland County Medical Society for 1961 are Dr. Cecil Parkerson, president, Dr. Loren

Bohnen, vice president, and Dr. James French, secretary-treasurer.

Book Reviews

DRUGS, THEIR NATURE, ACTION AND USE.

Harry Beckman, M.D. W. B. Saunders Company, Philadelphia, London. Pages: 728. January 3, 1958. \$15.00.

This is an excellent book and there is a distinct attempt to teach pharmacology in terms of the patient rather than to make this book an encyclopedia of drugs. It is well written, factual and up-to-date. Proprietary names are given and if this book is revised frequently, this should be an excellent aid. The review of drugs is coupled nicely with human physiology, and this should be of considerable help to the medical student. This book is also recommended as an excellent text for a practicing physician to have in his library. AK

MEDICAL, SURGICAL, AND GYNECOLOGICAL

COMPLICATIONS OF PREGNANCY, by the Staff of the Mount Sinai Hospital, New York City, and edited by Alan F. Guttmacher, M.D., Obstetrician and Gynecologist-in-Chief, the Mount Sinai Hospital, New York, and Joseph J. Rovinsky, M.D., Assistant Attending Obstetrician and Gynecologist, The Mount Sinai Hospital, New York.

This is an extremely interesting book. There is much valuable material in it. Consideration is given some of the less common complications of pregnancy. There is a good discussion of the hematologic problems. There is even a discussion of such a rare condition as myasthenia gravis. One of the common problems is the relation between hypertension and pregnancy. Other common features are discussed, such as gastrointestinal problems, varicose veins, etc. The book is well written by a group of distinguished authors, and edited by Dr. Alan F. Guttmacher, and Dr. Joseph J. Rovinsky. This book is heartily recommended to all members of the medical profession. AK

BLOOD DISEASES OF INFANCY AND CHILD-

HOOD, by Carl H. Smith, M.A., M.D., Professor of Clinical Pediatrics, Cornell University Medical College, New York, N. Y.; Attending Pediatrician, The New York Hospital, New York, N. Y.; Consulting Pediatrician, Beekman-Downtown Hospital, New York, N. Y.; Fitkin Memorial Hospital, Neptune, N. J.; Misericordia Hospital, New York, N. Y.; New York Infirmary, New York, N. Y.; St. Joseph's Hospital, Far Rockaway, N. Y.; Sea View Hospital, Staten Island, N. Y.; Consulting Hematologist in Pediatrics, Lenox Hill Hospital, New York, N. Y., illustrated, pp. 572, published by The C. V. Mosby Company, St. Louis, 1960.

This is an extremely interesting book covering a most important subject. The book is 572 pages

long, thus allowing an adequate presentation of the material. The book is almost encyclopedic in character but at the same time it can be readily used as a textbook in both hematology and pediatrics. The book discusses physiology of blood changes during growth, dyscrasias due to maternal-fetal interaction, generally discusses all types of anemias of childhood, abnormalities of hemoglobin, diseases of the white blood cells, and blood coagulation. There are excellent references at the end of the chapters. The book does not contain a large number of illustrations or charts; however, there is an adequate number. The section on leukemia is surprisingly short considering the amount of research in this field but it is certainly more than adequate. This book is heartily recommended. AK

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

A study in the school systems of Muscogee County, Georgia, shows that BCG vaccination does not appear useful in the United States. The risk of developing tuberculosis was high for reactors to five Tuberculin Units of PPD, but very low for nonreactors.

GEORGE W. COMSTOCK, M.D., and LAWRENCE W. SHAW. Public Health Reports, July, 1960.

Although some aspects of the role of BCG vaccination in tuberculosis control programs have been clarified by controlled field trials, divergent conclusions have been reached regarding its usefulness. This is well illustrated by two of the most recently reported trials, one involving a quarter of a million participants in Puerto Rico and the southeastern United States, and the other 56,700 subjects in Great Britain. Both reports agreed that the risk of developing tuberculosis was considerable among reactors to a low dose of tuberculin. But for the nonreactors, the British found a high risk of developing disease and substantial protection from vaccination, while the American trials led to the opposite conclusions, namely, that the risk for nonreactors was low and that the benefits conferred by vaccination were too slight to counterbalance its disadvantages.

The validity of the view that BCG vaccination should not be used in populations

with low infection risks is supported by the results of a controlled trial of BCG vaccination among the school population of Muscogee County, Ga., begun in April, 1947. Observations during the ensuing 12 years show that the infection rate in the community has been low and diminishing, that reactors to a low dose of tuberculin ran the greatest risk of developing tuberculous disease, and that BCG vaccination had no demonstrable effect on the tuberculosis problem.

All participants were tested with five Tuberculin Units of PPD (5 T.U.) and the nonreactors were tested with 100 T.U. Reactors are defined as persons with 5 millimeters or more of induration to the specified dose of PPD.

STUDY POPULATION

The study population consisted of 11,262 children with an average age of 11 years. Of the total, 1,492, or 13 per cent, reacted to 5 T.U. and another 3,768 (one third of the study population) were classified as reactors to 100 T.U. When certain "irregulars" were eliminated, there were 4,839 nonreactors to both doses who were divided into two roughly equal groups, one to be vaccinated and the other to serve as unvaccinated controls. The vaccine, supplied by Dr. S. R. Rosenthal of the Research Foundation, Chicago, was administered by multiple tangential acupuncture on the third or fourth day after preparation.

Six months later, 70 per cent of the vaccinated students were retested with 5 T.U. and 100 T.U. of PPD. Ninety-three per cent were reactors to one of the doses. Nonreactors to the higher dose were re-vaccinated.

In the 12-year period from April 1, 1947 through March 31, 1959, 35 cases of definite tuberculosis were discovered among the total study population, an average annual rate of 26 per 100,000. The rate for than for nonreactors, 134 for reactors and only 9 for nonreactors. No significant differences were noted among nonreactors to 5 T.U. according to their sensitivity to 100 T.U. The rates among controls and vaccinees were the lowest observed and were essentially the same. Although too few

cases were observed among controls and vaccinees to attempt any assessment of the efficacy of vaccination among nonreactors, it is obvious that vaccination was not completely effective.

REACTORS TO FIVE T.U. AT RISK

The findings of this study support the conclusions of subsequent controlled trials of BCG vaccination in Puerto Rico, Georgia, and Alabama. The most striking finding of these trials, and of the present trial as well, was that persons who were reactors to 5 T.U. of PPD had the greatest risk of developing tuberculosis. A corollary to this finding is that nonreactors to 5 T.U. had such a low risk of developing tuberculosis that there is serious question about the need for vaccination of nonreactors in this country. So low is this risk in the present study that only 11 cases of tuberculosis were found among nearly 10,000 nonreactors during a period of 12 years.

The conditions of the present trial are closer to the BCG trial conducted by the British Medical Research Council than any controlled trials previously reported.

Among reactors to the 5 T.U. dose in Muscogee County, 16 new cases are known to have developed in the first eight years, where 12 would have been expected at the British incidence rate. This is close agreement, and suggests that the risk for British and Muscogee low-dose reactors is generally similar.

On the other hand, where 2 cases had been observed in the first eight years among unvaccinated controls, 34 would have been expected had the British rates applied. This is a striking difference.

Comparison of the results of these two trials suggests that the risk of infection must have been many times higher in Great Britain than in the United States. This has a direct bearing on the need for vaccination in the two areas, since it seems obvious that the need for vaccination varies directly with the likelihood of becoming infected.

TUBERCULIN TESTING PROGRAMS

One finding strongly suggests that the currently popular tuberculin testing programs among school populations must be carefully done to define as sharply as possible the small group at greatest risk, namely those with 10 mm. or more of induration to 5 T.U. It appears that this small group should not only be X-rayed promptly but also should be kept under surveillance with annual chest X-rays for at least five years.

In areas where the infection rate is low, it seems that repeated tuberculin testing of entire school populations on an annual basis may well be inefficient. In such areas, it would be more reasonable to test the school population on entrance to school and again during adolescence.

It is now recognized that tuberculosis among the currently uninfected population in the United States is not of critical importance, but rather that the already infected population is the important seedbed of future disease. It is thus essential to discover some effective means of preventing the development of disease among apparently healthy reactors, thereby sterilizing the present seedbed of disease before another crop of tuberculosis cases can be germinated.

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Hypothermic Perfusion — A Clinical Study in Progress

JOHN CAREY, M.D., NAZIH ZUHDI, M.D. AND ALLEN E. GREER, M.D.*

During the past year we have employed hypothermic perfusion for the surgical repair of a wide variety of intracardiac lesions (5, 6, 7, 8, 9). There are distinct advantages inherent in the combination of total extracorporeal bypass in conjunction with an internal heat exchange device (2, 3). In this communication we wish to indicate briefly our technique, to report the highly satisfactory clinical results, and to further clarify the advantages of hypothermic perfusion.

METHOD

The heat exchange device consists of a tubular stainless steel coil introduced into the helical reservoir of the DeWall-Lillehei bubble oxygenator. It is easy to assemble, and is safe, inexpensive and efficient. Either ice water or warm water heated to 44°C is circulated counter-currently through the steel helix to either cool or warm the extracorporeal blood. This heat exchanger system has a surface area of 0.99 square meters and is at least as efficient as the Brown heat exchanger. The duration of the operation has not been substantially increased by the addition of hypothermia.

The perfusion rate in all our patients has been 20 cc. per kg. body weight. Three patients had body weights in excess of 70 kg. One patient with a body weight of 92 kg. was adequately perfused at 1500 cc per minute.

Cardioplegia is obtained only by aortic occlusion. Coronary flow is restored for two minutes at 15 to 25 minute intervals. By this maneuver we safely achieve a dry, quiet operative field.

RESULTS

The results of surgical procedures carried out in 40 patients are summarized in Chart I. We have listed the duration of perfusion, the degree to which hypothermia was carried, the total duration of aortic occlusion and the eventual result. There were only two deaths during the postoperative phase, and both in young children with the tetralogy of Fallot malformation. In one of these death was related to partial disruption of the ventricular repair on the 2nd postoperative day. The other child died on the 3rd postoperative day from bronchopneumonia. All remaining patients in this series are alive and well to date excepting one woman 40 years of age with a large atrial septal defect who died four months following surgery from acute pancreatitis.

The excellent clinical response of patients to hypothermia and total body perfusion has been most gratifying. These patients are alert upon the termination of the surgical procedure itself. Urinary output is reduced but maintained throughout perfusion; there have been no postoperative renal complications. Blood loss compares favorably with that following other extracardiac thoracic procedures. There has been minimal hemolysis during perfusion and no bleeding tendency.

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HYPOTHERMIC PERFUSION—A CLINICAL STUDY IN PROGRESS

TABLE I. HYPOTHERMIC PERFUSION
SUMMARY OF CLINICAL DATA

Patient	Age	Wt. Kg.	Defect	Duration of Perfusion Min.	Range of Cooling Degrees C.	Duration of Aortic Occlusion	Result
1	31	70	I.A.D.	38	27-30	15	Living and well
2	43-	50	I.A.D.	41	29-30	13	Died of pancreatitis 4 mos. p.o. repair intact
3	4	16.3	T.O.F.	69	26-30	22	Died 2nd p.o. day after doing well. Partial disruption IV repair
4	14	35	T.O.F. and P.D.A.	121	27-30	66	Living and well
5	4	14.5	P.S. and I.S.	124	23.5-31	0	" " "
6	11	43	I.A.D.	75	27-30	24	" " "
7	35	43	M.S.	38	26-30	18	" " "
8	8	19.3	T.O.F.	154	25-26	90	Died 3rd day p.o. after doing well; repair intact. Bil. broncho- pneumonia
9	9	25.6	I.A.D., P.S. and P.D.A.	58	28-29	12	Living and well
10	5	14	I.V.D.	121	24-25	40	" " "
11	31	59	I.A.D.	88	24-25	18	" " "
12	14	27	I.V.D.	85	23-26.5	24	" " "
13	42	52	P.S. and I.S.	100	28-31	25	" " "
14	7	19	T.O.F.	116	23.5-24.5	28	" " "
15	6	16.5	T.O.F.	106	22.5-24	18	" " "
16	12	59	P.S.	46	28.5-29	8	" " "
17	9	16	I.V.D.	80	24-26	38	" " "
18	52	38	M.S. and M.I.	69	29-31	11	Unchanged from pre-op. No repair performed.
19	25	59	I.V.D.	81	25.1-25.2	34	Living and well
20	2½	13	I.V.D.	45	21.5	11	" " "
21	29	65	T.O.F.	61	23-24	32	" " "
22	30	61	M.S.	68	24.6	9	" " "
23	4	17.5	I.A.D.	28	24.5	5	" " "
24	18	51	I.V.D.	81	23.5	21	" " "
25	39	60	I.A.D.	42	28	11	" " "
26	26	49	P.S. and I.S.	150	23	32	" " "
27	2½	12	I.V.D.	52	23.5	14	" " "
28	28	92	P.S.	53	29.5	7	" " "
29	1	8.8	I.V.D.	45	27	4	" " "
30	5	17	P.S.	57	28	3	" " "
31	14	48	I.V.D.	71	26.5	22	" " "
32	13	30	T.O.F.	95	29	37	" " "
33	30	43	I.A.D.	28	29	13	" " "
34	6	17.8	I.V.D. and P.D.A.	36	28	10	" " "
35	34	40	I.A.D.	50	27	13	" " "
36	27	71	A.S.	96	24.8	11	" " "
37	5	21	I.A.D.	38	25	8	" " "
38	45	49	M.S.	73	26	17	" " "
39	21	50	M.I. left	81	26	24	" " "
40	10	29	I.A.D.	34	30	7	" " "

DISCUSSION

There are distinct advantages to this combination of total body perfusion and internal hypothermia over conventional extracorporeal circulation.

1. The perfusion rate is greatly reduced. We use flow rates of 20ccs/Kg. of body weight in contrast to the 50-100 cc. flow required at normothermic temperatures. Cerebral, renal and cardiac functions are slowed (5) but in no measurable way impaired.

2. Because of lowered perfusion rate smaller cannulae, tubing and oxygenator size are employed. The priming volume of the pump is low and the blood is subject to less turbulence and hemolysis. Collateral blood flow through the lungs and mediastinal vessels in severe tetralogy of Fallot malformations may be enormous when standard flow rates are used. Despite cardiectomy suction, the operative field is often obscured. With the smaller perfusions volumes we have employed in hypothermia, this difficulty has not been encountered.

Total perfusion time with this technique may be prolonged for meticulous correction of the defect. On five occasions we have continued perfusion more than two hours without discernible harmful effect. Furthermore, the heart is supported intentionally during the crucial minutes immediately after correction of the defect.

4. Cardioplegia by aortic occlusion is safely maintained for periods of 15 to 25 minutes at one time. Because of the safety of prolonged aortic occlusion the surgeon is not under stress to hastily place sutures to complete the operation. Braunwald et al (1) have recently shown the harmful effect of potassium citrate and acetylcholine on myocardial contractility and the greater safety of simple aortic occlusion and of hypothermia to obtain cardioplegia. Their data may explain the acute myocardial failure often seen following chemically induced arrest. Gott et al (4) using an analysis of right ventricular biopsies found that glycogen levels and high energy phosphage systems (ATP and phosphocreatine) were reduced only slightly using hypothermic cardiac

arrest but were greatly decreased with potassium citrate arrest. By lowering myocardial temperature from 37°C to 17°C energy requirements are reduced to approximately 25 percent of normal, thus greatly lengthening the safe duration of aortic occlusion.

5. General hypothermia provides an extension of the advantages of cardiac cooling alone to all the viscera. With lowered metabolic requirements, periods of variable or absent arterial flow from whatever cause are better tolerated than at normal body temperatures.

SUMMARY

We have briefly discussed our technique of internal hypothermia with total body perfusion employing a DeWall-Lillehei bubble type oxygenator into which a tubular steel helix is introduced as a heat exchanger. This device is safe, simple and efficient.

The advantages of total body perfusion and hypothermia by this technique are 1) the low perfusion rate, 2) the reduced blood requirements, 3) the prolonged perfusion times possible for meticulous correction of defects and cardiac support, 4) that prolonged aortic occlusion for cardioplegia is permissible, and 5) that metabolic requirements generally are reduced as a safety factor.

Forty patients have had open cardiac surgery employing this technique with only two deaths. The last thirty-two patients are living and well.

The excellent results in a wide variety of cardiovascular lesions constitutes the strongest endorsement to this method.

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ADDENDUM

"Since submission of this paper, the machine has been primed with 5% dextrose in water which is pumped into the patient producing true moderate hemodilution. As the body temperature is lowered, the patient will stand such a degree of loss of his red blood cell mass. At the end of the perfusion the blood is returned to the patient and his red blood cell mass is restored. Thus, total cardiopulmonary bypass could be performed without the use of any blood. The blood loss from the surgical field is replaced with routine banked citrated blood. This technique has been successfully used in 80 patients. The double helical reservoir has been successfully used in 130 patients."

Etiology and Management of Acute Respiratory Insufficiency*

LEONARD W. FABIAN, M.D.**

A multiplicity of etiologic factors may be involved in the production of acute respiratory insufficiency but irrespective of cause, the therapeutic measures to be undertaken immediately consist only of establishing and maintaining a patent airway and assurance of the delivery of adequate oxygen to the alveoli. More definitive measures directed toward therapy of the underlying cause can then be instituted in a more elective fashion.

In considering the sequence of resuscitative efforts, however, it is well to be mindful of the important and more common causes of deficiencies in respiratory gas exchange. Comroe and Dripps (1) have provided a classification of hypoxia which is an important concept in the early management of acute respiratory emergencies since cause and effect relationships are established. For this reason it is worthwhile to present their classification in this discussion and to approach the problem of respiratory resuscitation accordingly.

I. INADEQUATE OXYGENATION OF NORMAL LUNGS

1. Deficiencies in atmospheric oxygen content.

This would apply to any situation in which the partial pressure of oxygen is reduced to a value less than 159 mm Hg. Exposure to asphyxiating gases is perhaps the most common representative of this group. This category, however, is also becoming more important due to an increase in the number of individuals exposed to high altitude flying.

Re-establishing an adequate oxygen content in inspired air will correct this situation if the airway is patent.

2. Obstruction to Flow in the Airway.

The impedance of respiratory gas exchange due to anatomic blockage is of utmost importance in the management of

comatose patients. A frequent cause of obstruction in individuals who have suffered cerebro-vascular accidents, trauma to the head or neck or depressant drug poisoning is relaxation of the pharyngeal structures.

Occlusion of the upper airway by posterior displacement of the tongue can usually be diagnosed immediately by observation of the respiratory pattern. Stertorous respiration accompanied by ineffective respiratory efforts are diagnostic criteria. Relief of this condition can usually be provided by lifting the angle of the mandible in an anterior direction. This manipulation will elevate the tongue from the pharynx and allow greater freedom of air flow. For maintaining a patency of the pharyngeal space, an artificial nasopharyngeal or oropharyngeal airway should be inserted.

Simultaneously one must observe for the presence of secretions, blood, vomitus or foreign bodies in the pharynx and any such material should be removed by suction. Where special equipment is not available for this purpose, a large syringe attached to a urethral catheter will serve admirably.

Obstruction to respiration may originate in the larynx as a result of infection and/or edema of the vocal cords. Acute laryngotracheobronchitis and diphtheria are prime examples of this category. Laryngeal spasm resulting from ingress of foreign material and damage to the laryngeal innervation or musculature are also important etiologic factors. A lack of improvement in air flow to the lungs following establishment of a patent pharyngeal airway suggests the possibility of laryngeal closure and attention should be directed accordingly in such cases. Partial closure of the vocal cords in the presence of respiratory effort is manifest by a high pitched, inspiratory noise commonly known as 'crowing'. Complete closure of the cords is manifest by

*Presented at the Arkansas Academy of General Practice, October 14-15, 1959 at Little Rock, Ark.

**From the Department of Anesthesiology, University of Mississippi Medical Center, Jackson, Mississippi.

complete absence of noise, vigorous but ineffective respiratory effort, cyanosis and marked distention of the great veins in the neck. In this instance immediate tracheostomy or endotracheal intubation is indicated. Adeptness in the latter technique is an important asset to the physician and in many situations may be preferable to tracheostomy as an emergency procedure.

In a dire emergency of this nature where proper equipment for permanent tracheostomy may not be available, any one of several measures may be used to establish a temporary infraglottic airway. A No. 13 gage needle inserted through the cricothyroid membrane is one such measure. Incising the trachea and spreading the incision with the knife handle can suffice as a temporary means of establishing the airway. Recently a special emergency instrument known as the tracheotome has been devised for this purpose.

Tracheal obstructions from pressure or foreign bodies and bronchial obstruction resulting from edema, secretions or spasm of the bronchial musculature may arise also from many sources. Perhaps the most common etiologic factors in this area are aspiration of gastric secretions or solid foreign bodies and bronchial asthma of allergic origin.

Removal of secretions or foreign bodies from the trachea will eliminate the obstruction of air passage in the trachea unless associated with external pressure from trauma or from mediastinal masses. In the latter instances, placement of an endotracheal tube or tracheotomy tube of sufficient length to by-pass the obstruction is necessary.

The emergency treatment of bronchospasm is directed toward dilation of the bronchi by pharmacologic and/or mechanical means using positive pressure breathing. Epinephrine-like compounds such as "isoproterenol (Isuprel)" are important adjuncts in therapy and nebulization used in combination with positive pressure breathing apparatus has shown particular promise in this regard.

3. Insufficiency of the Respiratory Muscles.

This category also includes a large number of etiologic factors which inter-

fere with proper ventilation as a result of neurologic influences. Any of these, however, may be and frequently are associated with obstructive phenomena as discussed previously. Respiratory center depression induced by opiates, barbiturates or anesthetics as well as by hypoxia or severe hypercarbia is an important facet of this group. Bulbar poliomyelitis, myasthenia gravis and increased intracranial pressure from any cause are also included.

The primary problem of respiratory gas exchange in this particular category concerns the inability of the patient to provide adequate pulmonary ventilation because of diminished respiratory reflexes. Accordingly, respiration must be assisted by external forces and in some cases may require total control by mechanical means.

In the management of patients whose respiratory control is diminished or absent, artificial respiration must be instituted and perhaps maintained for long intervals of time in order to preserve life. There have been many approaches to this problem, some of them simple and others quite complex, but perhaps the most important and efficient method of emergency management of these patients is mouth-to-mouth breathing. This method requires no bulky, specialized equipment and no special training. Patients can be kept alive for hours, if necessary until more ideal facilities can be reached. Safar (2) has investigated this method and found it more efficient than any of the manual methods such as the Schafer, Nielsen or Silvester techniques. He has also devised an airway which provides support for the pharyngeal structures on one end and a tube for use by the operator on the other end. This tube is known commercially as the 'Resuscitube' and has proven its worth many times throughout the country.

The Kreiselman bellows respirator is also an efficient unit but is subject to more mechanical difficulty than is the mouth-to-mouth technique.

In cases where high concentrations of oxygen are desirable, (and this includes most of the respiratory emergencies under discussion) such can be attained with a minimal amount of equipment and effort.

The items required are an oxygen cylinder with pressure regulator, a breathing bag, a face mask and tubing to connect the cylinder gage to the breathing bag. Such equipment is ideal for transporting in the physicians automobile or for use in the office or clinic.

Automatic respirators of many types are now available for special purposes or for general use in resuscitation. The scope of this discussion does not permit detailed descriptions of each type of respirator, but the advantages offered by automatically cycled breathing machines are worthy of investigation by all physicians.

II. INADEQUATE OXYGENATION DUE TO ABNORMAL LUNGS.

This constitutes the next major category in the classification of Hypoxia. Included in this group are those entities which produce (1) insufficient quantities of functioning lung tissue as in atelectasis, (2) Improper mixing of inspired gases throughout the alveoli as in emphysema and (3) poor diffusion of gases across the alveolar-capillary membrane as in acute pulmonary edema.

Of this group, acute pulmonary edema is perhaps the most common respiratory problem of emergency nature requiring immediate therapy of both the respiratory and cardiovascular systems. Although acute pulmonary edema can be of primary origin, it usually is part of the overall picture of congestive cardiac failure.

The problem involved here is that of large accumulations of fluid in the alveoli resulting from engorgement of the pulmonary capillaries. The basic therapy in this case is directed toward increasing the efficiency of the heart as a pump. Digitalization is specific but requires time for the onset of action by the drug. Unless the vicious cycle involving respiration is interrupted to some extent, however, severe hypoxia may have produced permanent damage before proper cardiac action can be reestablished. For this reason the use of bloodless phlebotomy, sedation and oxygen therapy should also be instituted immediately. The use of positive pressure oxygen in such cases is

quite important. Expiratory pressures of 2 to 3 cm. of water can produce dramatic relief of the respiratory distress.

III. Venous-arterial Shunts as seen in Congenital Heart Disease of some types or in atelectasis where unaerated alveoli are supplied with circulating blood may produce varying degrees of hypoxia.

IV. A most underrated source of hypoxia which may require resuscitative measures is Inadequacy of Oxygen Transport by the blood in cases of severe, acute or chronic anemias or hemorrhagic shock. Since hemoglobin is the only truly efficient method for carriage of oxygen to the tissues, the lack of adequate quantities of this material can predispose to severe upsets in respiratory homeostasis particularly in stressful or potentially hypoxic situations. Resuscitative efforts required in such cases also are directed toward both respiratory and cardiovascular systems.

V. The final category of hypoxia includes dysfunction of respiration at tissue levels involving tissue edema, hypermetabolism with increased oxygen requirements and poisoning by drugs of the cellular enzyme systems.

SUMMARY

Although any of the problems mentioned in the preceding discussion can result in irreversible anoxic injury to tissues, the immediate institution of resuscitative measures directed toward primary management of the respiratory implications can yield gratifying results.

The entire therapeutic regimen has been stated adequately and poetically in a recent book by Smith (3) who advises, Aspirate! Ventilate! Oxygenate!

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The University of Arkansas Medical Center Library: Services and Resources

MARIE HARVIN* AND ANNE LEGE**

"Perhaps no department is more vital to the educational and research program of the medical school than its library. Indeed, if a medical school were appraised by a single criterion, the library might well serve." (1) This statement by the American Medical Association is as true today as when it was published in 1940. It can be applied to all educational institutions, but a well-stocked and well-organized library is basic to the functioning of professional schools and research organizations. The University of Arkansas Medical Center Library serves most often the staff and students at the Center, but part of its aim is to serve health sciences personnel throughout the state.

All operations and techniques at the medical library are geared to achieve the best use of the books and journals and to permit the individualized service necessary to our clientele. In practical terms this means locating requested information or reference service, to use library jargon. It is available to everyone working in the health sciences fields in the state.

Requests for all kinds of facts occupy us daily. One technician wrote asking for the name and address of the manufacturer of a certain reagent. A physician called long distance asking us to locate several articles on Menière's syndrome and to have them ready for his use while he was in Little Rock on business the next day. A laboratory supervisor in a hospital often writes for supplementary material on clinical procedures needed by her staff. A surgeon in the state has been taking a refresher course, and we have mailed to him the journal references he does not have that are cited on his reading lists. An internist wanted to learn more about recent fluorescent antibody techniques and their applications; we loaned him the pertinent review articles.

Locating addresses can sometimes be difficult. When the person sought is "... a researcher in, I think, Massachusetts, who wrote a couple of articles about five years ago on perfusion techniques," much digging through directories, journals indexes and other "tools" (librarianese for reference books) is required to find the right man. Other addresses, such as those of physicians or faculty of medical, nursing, pharmacy schools, or hospitals, or outstanding people in other fields are usually a bit easier to discover.

At one time or another most professional people are asked to talk to the local P.T.A., or to a service club, or the local civil defense unit. When we at the library are asked to supply background material for these lectures, we try to tailor the information to the type of group to which the talk will be given. A few other examples of the kinds of information we can and will provide include the composition of drugs, lists of publications by men on a certain specialty board for physicians reading for their own board exams, and a listing of the books and journals we have in a given subject area.

To the Medical Center staff the library gives other specialized services, such as a daily scrutiny of journals received for articles related to research projects in progress, the borrowing of books and journal articles from other libraries throughout the country to supplement our own holdings, and long literature searches for background material needed for research grant applications, papers, speeches, etc. Teaching, both in formal lectures and on an informal basis to individuals, is an integral part of our service to the schools of medicine, pharmacy, nursing, x-ray technology and medical technology, enabling students, house staff, research workers, and physicians to extract the most from the wealth of information that can come from a library.

To have the right material on hand

*Librarian and **Reference Librarian, University of Arkansas Medical Center Library, Little Rock.

when it is needed requires an active and alert buying program. Totalling over 43,000 volumes, the collection is approximately two-thirds journals and one-third books and monographs. These are acquired mostly by purchase, but many generous gifts come to us each year. These books and journals cover every aspect of the basic sciences, clinical medicine and all its specialties, as well as pharmacy and nursing. A list of these journals is available on request to the library, and a monthly list of new books will be mailed to any Arkansas physician, dentist, nurse, pharmacist or other health sciences personnel who requests it.

With emphasis on the journal literature, it is necessary to maintain a wide variety of index and abstract publications such as the *Index Medicus*, now appearing in a new format and published jointly by the National Library of Medicine and the American Medical Association. *Chemical Abstracts*, the *Quarterly Cumulative Index Medicus* (which ceased publication under this title in 1956), *Biological Abstracts*, *Index to Dental Periodical Literature*, *Psychological Abstracts*, and *Excerpta Medica* with all its twenty specialty sections are only a few of the titles of this nature found in the library. Bibliography in greater depth is possible with such works as Nathan Shock's *Classified Bibliography of Gerontology and Geriatrics* and the Harvard University's extensive *Bibliography of hearing*. These and similar titles, combined with the *Index Catalogue of the Surgeon General's Office* and its successor, the *National Library of Medicine Catalog*, enable us to locate specific references on a given subject from almost any date period.

The encyclopedic sets in the various specialties form another important part of the collection. Comprehensive in scope and often containing exhaustive bibliographies and excellent illustrations, they are kept up to date with new volumes or revised insert pages. Examples of those here are Beilstein in chemistry, Mollendorff in histology, Henke and Lubarsch in pathology, Ross Golden's *Diagnostic Roentgenology*, and the American College of Cardi-

ology's *Cardiology, an Encyclopedia of the Cardiovascular System*, edited by Aldo A. Luisada. This non-circulating, reference-type material is rounded out by directories to scientific societies and by dictionaries in every field of the health sciences in the major languages as well as some of the more obscure ones.

A reserve book collection for students' collateral reading is constantly augmented with new editions and new titles of texts and monographs. Some of the special files maintained are those for pamphlet and ephemeral materials, duplicate copies of the more heavily used journals, reprints of articles by Medical Center staff, and bibliographies of members of the various specialty certifying boards.

Although we have no rare book collection of great value, the library does contain a separate section of older works of historical interest. Represented here in translation are such authors as Rush on diseases of the mind, Rokitsansky's pathological anatomy, several editions of Charcot, both in French and English, an edition of that "Johnny Appleseed" of American medical education, Daniel Drake, and the 1934 edition of Vesalius' *Icones Anatomicae* reprinted under the auspices of the New York Academy of Medicine from the original Calcar woodcuts which were destroyed during World War II.

The most serious deficiency in the library's holdings occurs where we should be strongest: in the all-but-total lack of records and archives on the history of medicine and pharmacy in Arkansas, on Arkansas physicians, and on the University Medical and pharmacy schools. We can only hope that some of the older original records—casebooks, prescription lists, school catalogs, etc.—will eventually come to us for preservation. We can be sure that today's medical and pharmaceutical Arkansiana will be collected and kept for the future.

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National Library Week, April 16-22, 1961

◆ What's NEW ◆

Proctology

JOHN LAURENS, M.D.*

In an article by the author (1) appearing in this journal about four years ago, attention was called to the use of various materials following anorectal surgery as one means of attempting to reduce postoperative pain and to improve wound healing. Rosenberg (2) reported on a series of 50 cases in which one percent hydrocortisone ointment was applied topically for the first five days following surgery. Reduction in edema; better alleviation of pain; a quicker return to gainful employment; and absence of sphincter muscle spasm, skin tab formation, and the usual subcutaneous fibrosis were the significant findings. The same investigator (3), in 1958, studied a group of 326 cases in which six different types of ointment were employed, in an attempt to prevent postoperative edema and the resulting skin tabs, and thereby to diminish postoperative pain.

Edema was classified by Rosenberg into two types: (a) interstitial, with marked swelling of the remaining bridges of anoderm; and (b) peripheral, with swelling of the perianal wounds themselves. This postoperative swelling is the result of incisional trauma with inflammatory reaction producing lymphatic and venous blockage. The end result is skin tab formation. In this second study he employed the use of color photographs in the immediate postoperative period, and at intervals until complete healing had taken place. Statistically, of the six ointments

used, the best record was made by patients treated with 2.5 percent hydrocortisone, and this was considered far superior to a 1 percent concentration when judged by the presence or absence of skin tabs.

Stimulated by this work, I have recently studied a series of 100 consecutive, unselected hemorrhoidectomies in which Kenalog-S Cream was employed instead. This is Squibb Triamcinolone Acetonide, a potent topical corticoid, containing 0.1 percent of the steroid, plus the antibacterial preparation, Spectrocin (Squibb Neomycin-Gramicidin).** Approximately two-thirds of the patients were treated in one private hospital, and the above material used on these only; while the others, in another hospital, served as controls. The material was applied two or three times daily with cotton applicators to the perianal and anal wound areas beginning on the first post-operative day and continuing for five to seven days, when the patients were discharged. It should be mentioned that my usual routine of after-care was also adhered to, consisting of Sitz baths, witch hazel packs and one of the topical analgesic ointments. The usual orders were left for narcotics by hypodermic or oral route as indicated.

Although this is a very small group of cases and no photographs were taken of the "end" results, I believe that, from a clinical standpoint, certain conclusions can be drawn: 1. Wound healing was smoother and quicker; 2. Skin tab formation and subcutaneous fibrosis was markedly reduced, meaning that edema was kept to a minimum; 3. The period of postoperative

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**The material used in this study was graciously supplied by Griffith J. Winthrop, M.D., Assistant Medical Director, The Squibb Institute for Medical Research, New Brunswick, New Jersey.

soreness and discomfort appeared to be shortened, and patients seemed anxious to return to work at least a week earlier than in the past; 4. Most important of all, a significant decrease in the number and strength of narcotics was noted, meaning less pain.

In conclusion, though this was only a pilot study, I am satisfied that the use of Kenalog-S in the early postoperative period after routine hemorrhoid surgery is helpful in reducing pain and improving

wound healing. Further investigations, employing a double-blind study, are at present being carried out and it is hoped that these will be helpful in an attempt to prove or disprove this premise.

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Some Recent Developments in the Etiology And Diagnosis of the Connective Tissue Diseases

LOUIS L. SANDERS, M.D.*

INTRODUCTION

The term "Collagen Disease" was coined by Klemperer, Pollack and Baehr (1) in 1942 to group together several diseases which showed some common changes of connective tissue on microscopic study. In the original paper this included rheumatic fever, systemic lupus erythematosus, (S.L.E.) and scleroderma, but the list was quickly expanded to include rheumatoid arthritis, dermatomyositis, polyarteritis, and serum sickness. At the time Klemperer and co-workers proposed that alteration of the collagen fibers was a common factor in this group of diseases, hence the name proposed. However, since then, there has been no evidence to support this concept, and it is felt by most workers in the field that alteration of collagen fibers is not involved in the pathogenesis of these diseases (2).

Because of its misleading nature, the term "Collagen Disease" is being largely replaced by some other term, such as "Connective Tissue Disease", "Mesenchymal Disease", etc. However, even though it was based on a false premise, the concept of collagen disease has been useful since it has drawn attention to the connective tissue as an organ, and has focused intense interest on this area, about which almost nothing was known ten years ago. We are still feeling our way in the dark, but progress is being made in elucidating the biochemistry and metabolism of connective tissue, and this will inevitably be followed by increased knowledge about pathological states of connective tissue.

THE ROLE OF AUTOIMMUNE PHENOMENA IN CONNECTIVE TISSUE DISEASES

Evidence is mounting that autoimmune phenomena play a part in at least some of the connective tissue diseases. For many years, the occurrence of autoimmunization was dismissed as impossible. Erlich's "Horror Autotoxicus" expressed the prevailing belief in the inability of the body to produce antibodies to its own constituents. Nevertheless, over the past two decades, evidence has been accumulating that autoimmunization does indeed occur (3). To list briefly, this evidence includes:

1) The discovery of autohemolysins in acquired hemolytic anemia, first noted by Widal and associates fifty years ago, then largely forgotten and rediscovered by Dameshek in 1938. In this condition, the body produces antibodies which are adsorbed to the surface of its own red cells, promoting their hemolysis.

2) The experimental production of chronic thyroiditis in rabbits by Witebsky and Rose (4) by injecting them with extracts of one lobe of their own thyroid. Anti-thyroid antibodies have also been demonstrated in some human cases of chronic thyroiditis (Hashimoto's Disease).

3) The experimental production of glomerulo-nephritis in animals by injection of extracts of various homologous tissues, and the demonstration of the localization of gamma globulin (presumably antibodies) in the basement membrane of the glomerulus in these diseases (5). There is other evidence which cannot be listed in detail.

Before discussing the part that autoimmune phenomena play in connective tissue

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diseases, we need to briefly review the antibody constituents of normal serum. It is generally assumed that the gamma globulin fraction of normal serum is made up largely if not entirely of antibodies (6). In fact, the term "gamma globulin" and "antibody" are generally used interchangeably. There is good evidence to support this assumption. For example, in animals raised under germ free conditions, the gamma globulin fraction is either greatly reduced or absent (7). There are some antibodies found in the alpha and beta globulin fractions, but by and far, the large majority of the antibodies are in the gamma globulin fraction. The gamma globulin fraction of normal human serum, when subjected to high speed centrifugation, can be divided into two subfractions, one containing a smaller molecule with a sedimentation constant of 7 Svedburg units and another containing a larger molecule with a sedimentation constant of 19 Svedburg units. The 7 S molecules make up the bulk of the gamma globulin fraction. The 19 S gamma globulin is present in much smaller amounts, and includes the ABO blood group antibodies, the Wassermann antibodies, and others. In normal human serum there are no molecules with sedimentation constant greater than 19 S.

SYSTEMIC LUPUS ERYTHEMATOSIS

Systemic lupus erythematosus (S.L.E.) has come to be regarded as the "autoimmune disease par excellence". The serum of patients with S.L.E. contains a multitude of antibodies. In fact, it has been regarded by some as a kind of "immunological epilepsy".

The discovery by Hargraves of the L.E. cell in 1948 revolutionized the diagnosis of S.L.E. Prior to that time, the diagnosis could be made only in the presence of the classical clinical picture, and many cases went unrecognized until autopsy revealed the true diagnosis. With the L.E. cell test, many of the variants and unusual clinical syndromes of S.L.E. came to be recognized, and the diagnosis has been made with increasing frequency earlier in its clinical course.

The L.E. cell test consists of incubating white blood cells in vitro with serum from

a patient suspected of having S.L.E. This may be done in a clot, on a slide, or in a number of ways. In a positive Wright's stained smear, polymorphonuclear leucocytes which have phagocytized a large round mass of violaceous homogenous material will be seen. This violaceous material has been found to be the bare nucleus of a leucocyte which has been altered by some factor in the serum of the patient with S.L.E. and then phagocytized.

After many years of intensive investigation, this L.E. factor has been isolated and identified. It has been found to be a gamma globulin, an antibody against certain substances within the nucleus, specifically, the nucleo-histone, and deoxyribonucleic-acid (D.N.A.) of the chromatin (8).

Just what is the significance of the L.E. factor and the many other serum antibodies found in the patient with S.L.E. in the production of the clinical syndrome? This is still a hotly debated point, but some tentative statements can be made. Almost certainly, the severe hemolytic anemia often seen in S.L.E. is produced by circulating autohemolysins. Many investigators believe that the leukopenia often seen is due to leukoagglutinins which can often be found in the serum of these patients; perhaps the thrombocytopenia can be similarly explained.

The role of the L.E. factor in the body is still uncertain. Hematoxylin bodies have been seen on microscopic examination of tissue from patients with S.L.E. for some time. It has now been shown that the hematoxylin bodies are, in fact, altered unphagocytized nuclei such as the L.E. bodies that make the L.E. cell (9). This would suggest that at times the L.E. factor can act within the body.

In summary, most authorities at present feel that the serological manifestations seen in S.L.E. are merely reflections of a widespread disorder in the immunological system, and while they may play a part in the production of various aspects of the clinical picture, they play no role in the basic underlying pathogenesis.

RHEUMATOID ARTHRITIS

Abnormal serum reactions have long been known to occur in patients with rheumatoid arthritis. The ability of rheu-

ETIOLOGY AND DIAGNOSIS OF THE CONNECTIVE TISSUE DISEASES

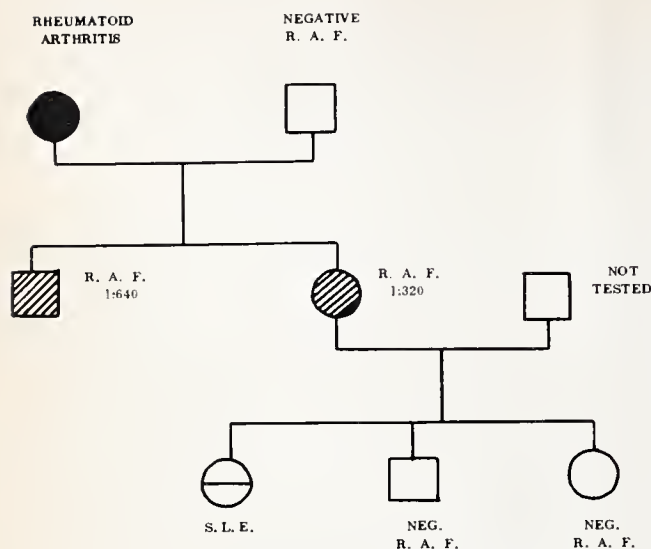


Figure 1. Pedigree of a family with two connective tissue diseases.

matoid serum to agglutinate sheep red blood cells has been used as a diagnostic test for over 10 years, and in recent years even more sensitive tests have been developed. These are all designed to detect one component, or group of components, in the serum of rheumatoid patients, the so-called "Rheumatoid Agglutinating Factor" (R.A.F.). Considerable investigation of the nature of the R.A.F. has been done. It has been found to be a heavy gamma globulin with a sedimentation constant of 19 S and a molecular weight of about one million, complexed with approximately 7 molecules of 7 S gamma globulin. The question of whether this abnormal 19 S gamma globulin represents an antibody to normal gamma globulin, with the R.A.F. thus representing a circulating antigen-antibody complex, remains unanswered.

The role of the R.A.F. in rheumatoid arthritis is also unknown. It has been shown by fluorescent antibody techniques that the R.A.F. is produced by plasma cells in the inflammatory and synovial tissues in patients with rheumatoid arthritis (10), and there is some evidence for fixation of the R.A.F. in the synovium of patients with rheumatoid arthritis. In all likelihood, however, the R.A.F., like the L.E. factor is merely a manifestation of a basic underlying derangement of the immunological system in these patients.

Table I is a summary of the main types of tests for the R.A.F. with the percent positive and false positive. In all of these tests an indicator of some type is coated

with a reactant, which is some type of gamma globulin. In the presence of the R.A.F., agglutination occurs. As can be seen from the table, the most sensitive test is the Euglobulin inhibitor test. This test is based on the inhibition by normal serum of the agglutination produced by a known rheumatoid serum with sheep RBC, presumably due to an inhibitor present in the normal serum. In rheumatoid serum, the inhibitor is presumably tied up by the R.A.F. and such a serum will not produce inhibition. Thus lack of inhibition of agglutination represents a positive test. Although this test is the most sensitive, technical difficulties prevent its widespread use. The latex particle test, however, is available commercially in a simple slide test which could be done in the practitioner's office. The slide test is very sensitive but has a higher percentage of false positives. For hospital use, the latex particle test is available commercially in a serial dilution form.

TABLE I. Tests for the Rheumatoid Agglutinating Factor.

Test	Indicator	Reactant	% + with known Rheum. sera	% false positive
Sheep cell Agglutination Tests	Sheep Erythrocytes	Rabbit anti-sheep erythrocyte serum	60-85%	0-11%
Latex Particle Tests	Polystyrene Latex Particles	Fraction II (gamma globulin) of pooled human serum	70-85%	1-7%
Bentonite Flocculation Test	Bentonite Particles	Fraction II of pooled human serum	75-85%	1-5%
Euglobulin Inhibition Test	a) Sheep Erythrocytes b) Known positive Rheum. sera	a) Rabbit Anti-sheep erythrocyte serum b) Euglobulin	95-98%	3-4%

FIBRINOID

One of the pathological characteristics of the connective tissue group of diseases is the findings on microscopic examination of areas of "fibrinoid" degeneration. These are areas of intensely eosinophilic staining material with a rather homogeneous appearance, found in the connective tissues of various organs. It was previously thought that this represented altered collagen, hence the name "Collagen

disease". However, chemical examination of fibrinoid has revealed no evidence of hydroxyproline, an amino acid found in large amounts in collagen. Instead, fibrinoid apparently contains fibrin and gamma globulin (11).

Using fluorescent antibody technique, Vasquez and Dixon (12) have studied tissue from patients with rheumatoid arthritis, S.L.E., and rheumatic fever. They used fluorescent rabbit antibodies against human gamma globulin, and by locating the fluorescence in tissue sections, they were able to show areas where gamma globulin was fixed. In patients with rheumatic fever, they found gamma globulin in the altered peri-vascular connective tissue of the heart. They could not, however, show any greater amount of gamma globulin in the Aschoff bodies of the heart than in the surrounding connective tissue.

In rheumatoid arthritis the gamma globulin was localized predominantly in the areas of fibrinoid necrosis in the rheumatoid nodules.

In S.L.E. gamma globulin was found in the areas of fibrinoid degeneration of the connective tissue, and also in the walls of the arterioles and in the thickened basement membranes of the wire loop lesions of the glomerulus. Although this study merely shows the presence of gamma globulin in these lesions, and does not prove that these are antibodies, or antigen-antibody complexes, it would seem to support the idea that disturbances in the immunological system are involved in the pathogenesis of the connective tissue diseases.

INTERRELATIONSHIP BETWEEN CONNECTIVE TISSUE DISEASES

Of special interest is the growing evidence of interrelationships between various connective tissue diseases. This is particularly true with S.L.E. and rheumatoid arthritis. On either extreme of the spectrum are the classical cases of each, but in between these are cases with characteristics of both, so that it is difficult to make an absolute diagnosis of either. It has been known for sometime that some patients with rheumatoid arthritis, often of long years duration, developed positive L.E. tests. It is now being shown that a

fair percentage of patients with S.L.E. have the R.A.F. in their serum (13).

Of further interest is the familial occurrence of the connective tissue disease. There are now many cases of families where there are one or more of these diseases occurring in several generations. Shown in Figure I is a representative pedigree of one such family.

Thus when a diagnosis of a connective tissue disease is made in an individual, the family physician should be alert to the possibility of connective tissue disease occurring in other members of the same family.

In view of the evidence suggesting that autoimmune phenomena play a part in the connective tissue diseases, the experience of Good (15) with connective tissue disease in patients with agammaglobulinemia is especially interesting. In his series of 27 patients with agammaglobulinemia, there were nine patients with connective tissue disease, eight with rheumatoid arthritis, and one with S.L.E. This is of course a much higher incidence than is found in the general population, and would speak against any autoimmune involvement.

In families of some of these patients, however, there was an extraordinarily high incidence of rheumatoid arthritis, and several other members of such families without any obvious arthritic changes has the R.A.F. in their sera. It has been suggested that perhaps both rheumatoid arthritis and agammaglobulinemia may be manifestations, at opposite poles, of a basic underlying defect in the immunological system.

SUMMARY

In summary, there is considerable evidence that there is a marked disturbance in the antibody producing system of patients with connective tissue disease. In addition, this disturbance appears to have an inheritable basis, in view of the marked familial incidence of some of these diseases. Many advances have been made in the field of diagnosis of these diseases in recent years, but the basic single underlying pathogenetic factor, if there be but one, remains unknown.

ETIOLOGY AND DIAGNOSIS OF THE CONNECTIVE TISSUE DISEASES

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Arkansas Public Health at a Glance

Maternal Death Rate

The maternal death rate in Arkansas has continued to decline; and has now reached a rate of six per ten thousand live births during 1959, the last year for which statistics are now available. This figure compares to the latest national rate of four per ten thousand live births.

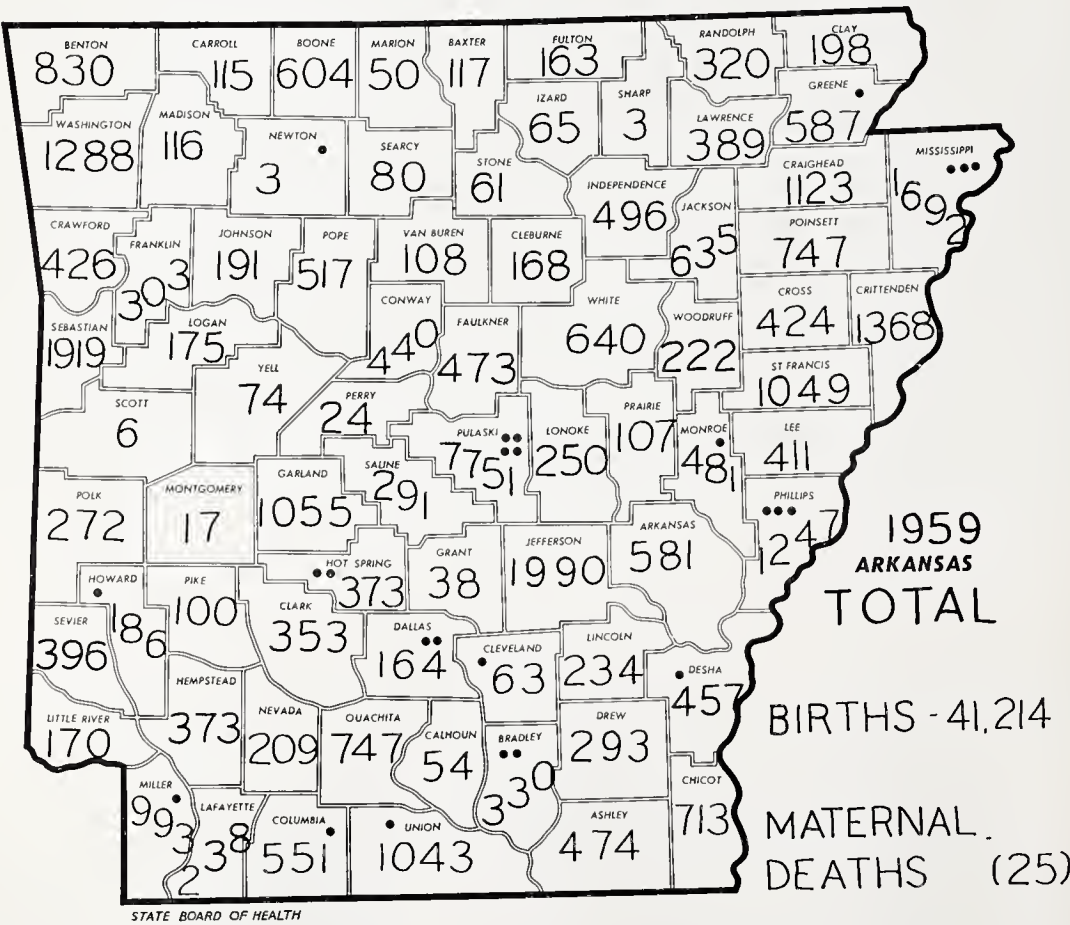
There were 41,214 live births in Arkansas during 1959. This is the lowest total number of births since 1945, and is 7,000 below the peak year of 1949. The decline is among white births entirely.

The twenty-five maternal deaths were

restricted to only sixteen counties. Considering the number of live births, Cleveland County had the highest maternal death rate with one death in 63 live births. Dallas County had two deaths in 164 births and Bradley County had two in 330 births. The highest number of maternal deaths occurred in Pulaski County (four in 7,751) and Mississippi County (three in 1692).

The accompanying map shows the number of live births in Arkansas during 1959 by counties. Each black circle indicates one maternal death.

LIVE BIRTHS & MATERNAL DEATHS



Editorial

The Unclear Mandate

ALFRED KAHN, JR., M.D.

This Journal wishes our new President-elect, John F. Kennedy, congratulations and much success in the handling of our nation's complicated affairs. However, his election majority was only microscopically larger than his opponent. The so-called mandate of the people seems a bit muddled when measured by the election standards. In other words, the roughly 0.4 percent margin of popular vote victory hardly reflects a decisive call from the public to endorse the total Kennedy platform. On one point, organized medicine is completely opposed to Mr. Kennedy's platform; namely, immediate revision of the current program for health aid to the aged. The current Federal health aid program was carefully studied by the last Congress before the passage of the bill. This Congress was controlled by the Democratic Party. The bill represents a workable plan for Federal aid to the aged, which Congressional leaders and leaders of the Medical Profession have endorsed.

Any extension or alteration of the current Federal Aid Plan for the aged is unwarranted unless actual usage proves it to be unworkable. The current bill is virtually untried. An attempt to expand or alter the present bill without adequate trial would represent largely a political gesture. Why condemn the current plan without giving it a trial?

The Medical Profession has traditionally been opposed to government participation in the practice of medicine. Actually, the endorsement of the current Federal statute is a compromise position for organized medicine in this country. Every physician wants proper care for the aged, and there has certainly been no proof of the need for Federal aid for medical care, considering private insurance plans and the current economy of our country.

If there has to be medical aid for the aged, it would be far cheaper and probably better administered if it were carried out at state level rather than by the Federal government. The Fabian socialists are gradually gaining of our every walk of life. There is no reasonable retreat because Federal spending requires such high taxes that no one is able to save for future needs.

One of the biggest deterrents to accepting Mr. Kennedy's proposed health plan is the fact that there would not be enough hospital beds available without the strictest policing of hospital admissions. In short, this would mean a good deal of so-called "red tape" to determine which patient should go in the hospital; otherwise, the hospitals might be flooded with admissions. This, in turn, could lead to a second very serious consequence, namely, that it would impede the normal flow of admissions into the hospital and probably prevent many deserving sick patients from gaining hospital admission in a time of serious illness. Who can foresee the future clearly enough to be certain that this proposed new federal aid to the aged might not be extended to all segments of the population and, in effect, bring about socialized medicine.

The program of federal health aid proposed by Mr. Kennedy is probably too expensive for us to reasonably afford it. No one can foresee the exact cost of this proposed program but anyone can see that it would be vastly expensive in a government already burdened by heavy debts.

The Medical Profession should fight any attempt of the new administration to alter the current law for health aid to the aged until usage proves where changes are needed.

Which Will It Be?

J. A. CLENDINEN*

Health Insurance is big business. For 1959, the last year for which figures are available, insuring companies and organizations took in \$6.7 billion in premiums and paid out \$5.2 billion in benefits.

We assume insurance companies would like to keep the Federal Government from invading this field, as President Kennedy proposes that it do through Social Security protection for the elderly.

Well, if hospitalization and medical care are to remain a matter of private, voluntary arrangement the insurance companies had better give their attention to two sources of public discontent.

One is the inadequacy of insurance protection for persons of 65 or over.

The other is the company practice of reserving the right to cancel a policy after the first claim for benefits.

The high risk on the elderly makes hospitalization insurance for this group a difficult problem. Perhaps it is not possible to offer an adequate policy, at reasonable rates, without some form of government cooperation, such as special tax credits for losses on writing insurance in this age bracket. An approach of this kind has been suggested by Florida's Senator Smathers.

The second matter is one which the insurance companies should be able to correct.

A committee of the Florida Legislature, taking note of widespread dissatisfaction with policy cancellations, is inquiring into the situation with a view to recommending remedial laws. It was told by one insurance company spokesman that non-cancelable policies are available only to persons who can pass rigid physical examinations, and then only at higher premiums.

There is an element of injustice here and we think Senator L. K. Edwards of Marion County (Florida) pointed it out

very forcefully by citing a case of which he said he had personal knowledge.

"To sell health insurance to a boy 19 or 20 years old, let him pay on it year after year and then when he has a heart attack at 47 cancel his policy — that's wrong," said the Senator.

Insurance companies ought to be able to offer a fairer deal than this. If they insist they cannot, without losing money, then the state may have to adopt a requirement suggested by Senator Dempsey Barron of Panama City: "Make them print in big red letters 'This is a cancellable policy.'" Then, at least, the policyholder would not be deceived into thinking he was buying permanent protection.

The ever-rising cost of hospital care and medical service makes health insurance desperately important to people of Florida and the nation. At the start of 1960, there were 128 million Americans with some form of health coverage. In Florida, more than 2,800,000 held hospitalization policies; their premium payments, for 1958, totaled nearly \$125,000,000.

Surely, it is far better to have citizens thus provide their own cushion for the shock of illness and injury than to hand the responsibility—and the taxes—over to the Federal Government.

But let us not suffer the delusion that the federal hand can be stayed by loud outcries against "socialized medicine". The man whose policy has just been cancelled after years of premium payments, or the oldster who finds his savings wiped out by illness, will not be much moved by this argument. Nor will his Congressman.

Private enterprise is challenged here to show that it can repair two deficiencies in the operation of what has become a seven-billion-dollar business. It must come forward, then, with some remedies — or the biggest business, Government, surely will.

*The Tampa Tribune

MEDICINE IN THE NEWS

E. R. Squibb and Sons have announced a proposal which will provide a 10 percent allowance to those states which reimburse retail pharmacies directly for prescriptions for Squibb products filled by pharmacies for state welfare patients.

From: American Hospital Association

Reduction in the number of foreign medical graduates in this country has little to do with the growing number of unfilled hospital house staff positions, according to Willard C. Rappleye, M.D., president of Josiah Macy Jr. Foundation, New York. The unfilled positions result because more internships and residencies have been approved than can actually be filled. Available internships (13,032) and residencies (30,733) far exceeds the number of graduates of American medical schools (7,081 in 1960).

The American Medical Association and the American Hospital Association ruled that as of December 31, 1960, hospitals must remove unlicensed or uncertified graduates from patient care situations or face loss of approvals. The physicians who were removed from patient care situations may take the next examination, scheduled for April 4.

Most foreign graduates are expected to return home, where they will organize and improve medical education and service. Thus their educational programs here should be geared to such an aim, Dr. Rappleye said.

Temporarily, in order to staff American hospitals, it may be necessary to set up rotating programs whereby the attending physicians remain on call for the entire hospital on weekends and at night. According to Dr. Rappleye, the most logical solution is probably employment of well qualified recent graduates on a full-time or part-time basis by the hospitals. Such young physicians can remain in the positions for several years while establishing themselves in the community.

Washington Report—Notes On Capitol Events

On the Rayburn vote of confidence, Arkansas' delegation was the most conspicuous "rebel" against the South's almost solid position in opposition. Of its 6-member group, four supported enlargement of House Rules Committee. These included chairmen of Powerful Ways & Means (Mills) and the Kennedy-sponsored Rayburn resolution (Alford).

Senator Barry Goldwater (R., Ariz.), in a Pittsburgh speech, disputed the urgency which Administration attaches to issue of medical care for aged.

Senate Finance Committee approved Ivan A. Nestingen as Under Secretary of Dept. of HEW and Alanson W. Willcox as its general counsel.

From Washington Office, AMA: The Month in Washington

Washington, D. C.—President Kennedy asked Congress to increase social security taxes to finance limited medical care for elderly persons on the social security rolls, a plan opposed by the medical profession.

The proposal was part of a sweeping health program outlined by Kennedy in a special message to Congress during his first month in the White House.

The Kennedy program also included federal aid for construction and operation of medical schools, scholarships for medical and dental students, grants for community nursing and hospital services, stepped-up medical research and expanded federal activity in the field of child and youth health.

Under Kennedy's proposal, social security beneficiaries 65 years and older could get up to 90 days of hospitalization for each single illness. However, the patient would have to pay \$10 daily for the first nine days of hospitalization with a minimum payment of \$20.

After release from a hospital, the elderly person could get up to 180 days in a nursing home. The social security program also would provide for payment by the government of all out-patient diagnostic costs in excess of \$20 and community visiting nurse services.

The program would be financed by increased social security taxes by one-fourth

of one per cent on both employers and workers and by three-eighths of one per cent on self-employed persons covered by social security. The social security tax base also would be increased from the present \$4,800 a year to \$5,000.

Enactment of this proposal, coupled with another Kennedy recommendation and increases in the social security tax already scheduled in the law, would mean that workers and employers would be paying \$250 each in social security taxes in 1969.

Nationwide television audiences were told by an American Medical Association spokesman why the medical profession supports the Kerr-Mills program of medical care for the aged and opposes tying it in with social security.

In television debates with Sen. Hubert Humphrey (D., Minn.) on NBC-TV and Walter Reuther, organized labor spokesman, on CBS-TV, Dr. Edward R. Annis of Miami, Fla., described the Kerr-Mills program as "sound and effective". He said it "must be given the chance it deserves."

"Congress passed it because it believed that the important thing was to help the people who need help; to help them quickly; and to help them through the machinery of local government," Dr. Annis said.

The A.M.A. Board of Trustees charged the CBS network with "misrepresentations, bias, and distortions" on another program: "The Business of Health—Medicine, Money and Politics."

The network edited out of the taped program the A.M.A.'s true position on health care for the aged:

"The A.M.A. believes that any medical care plan is both unsound and unfair which would compel working people to shoulder increased social security taxes to finance health costs of all those over 65 (under social security), rich and poor alike, regardless of whether they want or need such help and which, at the same time, ignores millions of indigent elderly who do not need help."

Kennedy's health program faced strong opposition in Congress. The consensus of Capital Hill observers were that it stood

a 50-50 chance of getting Congressional approval but not before it had been cut down. There were some who doubted that the Administration's program for medical care of the aged would be acted upon, at least by both houses of Congress before next year.

Even some Democratic Congressmen with the liberal label were taken back by the scope of Kennedy's health program.

Arthur H. Motley, President of the Chamber of Commerce of the United States, warned that social security taxes are being increased to a point "where people might rebel against the whole Social Security system."

He contended that this nation's present personal medical care system is the best of any large nation.

"It's worth crusading for and that is what the Chamber is doing," Motley said.

FROM ASSOCIATION OF AMERICAN MEDICAL COLLEGES

MEDICAL SCHOOL EXPENDITURES IN THE U.S.: 1925-1959

This datagram presents a summary of the increases in the total expenditures, exclusive of expenditures for hospitals and clinics, for all U.S. medical schools for the period 1925-1959.

It must be remembered that the purchasing power of the U. S. dollar has shown great variation between 1925 and 1959. Therefore, if valid comparisons on medical school expenditures are to be made for stated years during this period, adjustment to a standard dollar becomes necessary. The Department of Labor, Bureau of Labor Statistics, has selected one hundred cents as a dollar equivalent for the base period 1947-1949. The 1947-1949 dollar equivalents for each of the years under consideration were determined by multiplying the actual dollar expenditure by the reciprocal of the appropriate consumer price index as determined by the Bureau.

Figure 1 provides a graphic representation of the growth of expenditures for medical education for the years 1925, 1941, 1948, 1957, and 1959, in terms of two considerations: (a) the adjusted dollar volume of

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total expenditures for each year noted on the graph (b) the rate of increase in expenditures using the 1948 adjusted dollar volume of expenditures as 100% for a point of reference. The adjusted expenditures of each of the years that precede and follow 1948 are shown, in turn, as percentages of the 1948 figure.

The year 1947-1948 is a logical one to use as a basic point of reference in the history of medical school financing not only

because it falls within the period shown by the Bureau of Labor Statistics for establishing a standard dollar equivalent but also because it marks the period in time when the present increased emphasis upon research and advanced education in the basic and clinical sciences, as well as great change in undergraduate education, began to develop. The expenditure increases for U. S. medical education from 1925 to 1959 are both clear and impressive.

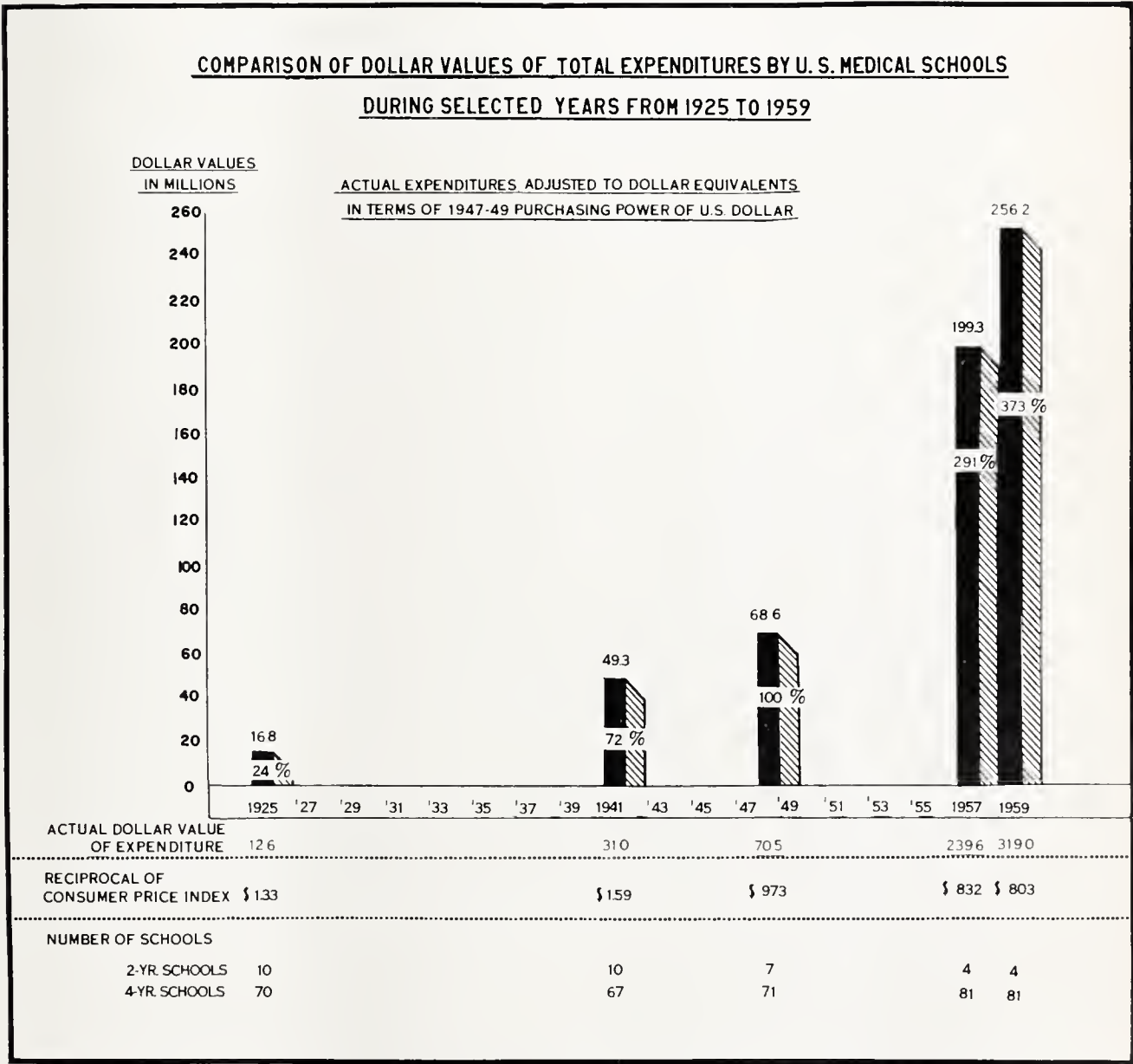


Figure 1

From The Modern Hospital:
Hospitals, Unions Map New Strategy

Chicago—Hospitals and unions are mapping fresh strategy for new organization drives in the health field, a professional journal reports.

The Modern Hospital, in a special nationwide study, says both sides appear to be playing a nerving, waiting game with neither revealing—or perhaps sure—of its next move.

The uneasy truce which has existed for

months, however, has allowed time for bruises to heal from last year's vigorous drives in which there were few clear-cut victories for either side.

Reports from across the country, the journal for hospital administrators says, indicate that with few exceptions hospital administrators and officials still feel that unionization of hospital employes is not necessary, wise or inevitable.

The journal quotes a typical hospital association official as saying the way to keep unions out is to improve personnel practices and "remove as far as possible the conditions that lead to unionization."

The magazine's study notes that unions claim their aggressive efforts have forced hospitals to sweeten their employe policies.

"Whatever the incentive, writes Aaron Cohodes, the magazine's managing editor, "hospitals all over the country are pulling up their salary scales and wading into enlightened personnel programs, that, in most cases, are turning out to be less formidable than anticipated.

"National, state, regional, metropolitan and local hospital associations are hustling around outdoing each other in staging personnel institutes.

"Seminars or discussions on how to develop written personnel policies, job descriptions, job analyses, grievance procedures, and techniques for defeating organization attempts are taking place in virtually every state—even those that as yet have felt no pressure from unions."

On the union side, Cohodes reports, labor leaders may be more careful in their timing of drives against a particular hospital, taking more into account local economic conditions.

Unions also appear, the magazine study indicates, to be relying on legislative help on the state level. Bills requiring hospitals to bargain with unions are expected to be introduced in such key states as New York and Illinois.

A Proposed Statewide Program For Medical Assistants

At its meeting on December 18th the Council of the Arkansas Medical Society voted its approval and active support of an educational program for persons employed in doctors offices or those who are

interested in such employment. The program was worked out with the Arkansas Medical Society Committee on Education through its chairman, Dr. C. C. Long, the State Medical Society Headquarters and the State Medical Assistants Society with the University of Arkansas Extension Service. Such an educational program is considered a most valuable opportunity for physicians to improve public relations through their offices, to increase efficiency, improve the work and to cut costs. The latest information indicates that the first program will be started in the Southern part of the State about April 1st. Courses will be set up in other sections of the State immediately thereafter. Each doctor and his medical assistant will be notified by the State Society office and by the Medical Assistants group when a program is proposed for his area. The program is described in the following proposal written for the Council of the Arkansas Medical Society by Mr. Guy Berry of the Division of General Extension of the University of Arkansas.

"At the request of the Arkansas State Medical Assistants Society the University of Arkansas, Division of General Extension, is undertaking the task of working out an approved, non-credit, certificate program for members of the Society. The purposes of such a program are: (1) to improve the day to day competence of in-service people and to add prestige and status to the work, (2) to qualify in-service people to pass examinations for membership in the American Association of Medical Assistants, and (3) to offer a training program for persons who are not now employed as medical assistants but who may wish at a later date to be so employed.

In attempting to develop and continue such a program it seems desirable that the program should be developed cooperatively by the University, the Medical Assistants Society, and the Arkansas Medical Society, but it should be a continuing, educational program of the University with a logical, purposeful sequence and one with status in the University and for which a student, who successfully completes the program would receive a University certificate. Initially, it seems to

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be desirable to offer the program as an evening program with classes meeting one evening each week for a two and one-half hour session for a period of six weeks, giving a total of fifteen class hours of instruction per unit or course. The state would be divided into districts with a centrally located town in each district being designated as the place where classes would be offered. Where practical, these places would be in a college town. Classes would meet at designated places with medical assistants commuting from neighboring towns. Courses would be offered at all places, one at a time and in the order or sequence as listed in the program, to insure orderly, systematic progress toward the awarding of the certificate and preparation for the American Association Medical Assistants' examination.

In a release of October 30, 1960 the Education Committee of the American Association of Medical Assistants states that the Committee anticipates that, by the end of 1960, it will be ready to offer a trial examination for the purpose of certifying efficiency as a medical secretary and/or medical assistant. The Committee further lists a sequential breakdown of areas which will be covered by the examination. This listing seems to provide a very good initial guide for the development of the program in Arkansas. The scope of the program covered in the listing indicates that it is improbable that the program, as suggested in the listing, can be fully developed here and finished by anyone in Arkansas by the end of 1962, but, if the program can be soundly developed along the lines suggested and the "show well on the road" by the end of 1962 it will be a significant achievement.

The listing of the breakdown by areas is as follows:

All examinees:

Medical Terminology, Anatomy and Physiology, Personal Adjustment and Human Relations, Law in Medicine, Ethics and Public Relations.

Medical Secretary:

Medical Office Management, Secretarial Skills, Secretarial Accounting, Economics, Credits and Collections,

Written and Oral Communications, Medical Records.

Medical Assistant:

Examination Room Techniques, Principles of Physiotherapy, Principles of Electrocardiography, Orientation to Bacteriology and Hematology, Orientation to Laboratory Techniques, Orientation to X-Ray Procedures, Sterilization Procedures and Care of Equipment.

It seems desirable, initially, and for the sake of expediting the planning and organizing of the program and getting some classes started, that for the present time, only the part listed under "All Examinees" be planned for this year. When this part of the program is set up and under way plans could be developed for the other sections of the program.

It appears that the two major problems in developing the program will be (1) the availability of qualified persons to teach certain of the units of the courses, and (2) financing the out-of-pocket costs of the program.

The nature of some of the courses will require, if an effective job is to be done, a teacher who is intimately familiar with the material to be covered in each unit since it will be necessary to digest in syllabus form and in six assignments, the material covered in a good textbook. The question arises immediately, "Who is competent and available to digest the material and prepare a syllabus?" This division can reproduce the material in any desired number of copies, but it does not possess the "know how" to digest the material into six lessons or study assignments. That will require a practitioner or some one intimately familiar with the material to be covered. This problem cannot be solved without the active cooperation of doctors, and perhaps, nurses. The Medical Association, working through the State Association or through local affiliated chapters, can insure the solution of the first problem — available, qualified teachers. The second problem—the financial one—is related to the first one, in that compensation to teachers must be considered in planning the program and in determining

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fees. The program must be self-sustaining. If doctors volunteer to teach certain units, the unit cost will be affected.

The size of the class is also a factor in computing course costs. Naturally, if there is an assurance of 25 students in every class, or if fees are based on an assumption of 25 students, the per student fee could be less than if the fee is based on an assumption of 15 students per class. This may suggest the need for selecting places to offer the courses where rather large numbers are in commuting distances of the place selected. (We have many students who travel 50 to 100 miles one evening each week to participate in programs at University off-campus centers.) Specifically, Magnolia might be a desirable site, with medical assistants from El Dorado, Camden, Hope, Prescott and Texarkana commuting for the once a week class. Such an arrangement could provide a rather large potential, insure a large group, and thus reduce costs. This is suggested as a possibility and as a pattern which could be used statewide to insure that the program could be financed.

The University of Arkansas, jealous of its standards, just as is the Arkansas Medical Society, will be very much concerned that the program is sound in its conception and in its operation and management. It will award certificates which will indicate its approval of the program and what has been done. The University knows that the Arkansas Medical Society and the Arkansas Medical Assistants Society are just as concerned as is the University that the certificate when hung on the office wall will be a mark of distinction and one which the recipient will hold with pride.

ANNOUNCEMENTS

Dates to Remember

Annual Session, Ark. Med. Soc.
Little Rock, Arkansas

April 16-19, 1961

The Second Hahnemann Symposium on Hypertension: Recent Developments, will be held May 4-7, 1961 in Philadelphia, Pa.

1961 Annual Meeting AMA
New York, N.Y.

June 26-30, 1961

Annual Meeting, Arkansas Academy
of General Practice, Little Rock, Ark.

Oct. 11-12, 1961

1961 Clinical Meeting AMA
Denver, Colorado

Nov. 27-30, 1961

PERSONAL AND NEWS ITEMS

On January 11, 1961, the **Greene-Clay** County Medical Society was addressed at Paragould by **Dr. T. Duel Brown** on "Practical Hypnosis for the Physician and Dentist". The Woman's Auxiliary attended the meeting, also.

The Arkansas County Medical Society and Woman's Auxiliary heard Dr. Brown on January 17th when he spoke to them on the same subject.

Dr. John D. Ashley, Newport, received the Newport Kiwanis Club's second annual "Citizen of the Year" award at the Chamber of Commerce banquet in January. Dr. Ashley was selected by public vote on ballots printed in The Independent and other Jackson County newspapers from among three other finalists. In announcing Dr. Ashley's selection, it was said that he is "one of Jackson County's many outstanding citizens".

The Booneville Junior Chamber of Commerce awarded its first annual Distinguished Service Award to **Dr. Donald E. Loveless**, at its January meeting. Candidates for the distinguished service plaque are selected from persons who have established a record of leadership in community affairs.

Dr. Roger Bost, prominent Fort Smith Pediatrician, addressed the Charleston PTA January meeting. The program placed emphasis on the betterment of fa-

cilities and understanding regarding child development.

Dr. Jere Long was elected Chief of Staff of Mercy Hospital, Brinkley, at the January meeting. **Dr. N. C. David** was elected vice president and **Dr. W. L. Walker** was named secretary. Other members of the staff are **Dr. E. D. McKnight**, **Dr. J. P. Williams** and **Dr. M. L. Dalton**.

City Hospital, Fayetteville, has recently undergone complete interior renovation at a cost of \$30,000.00. Open house was held on January 22 for the public to see the improvements.

Dr. R. L. Lewis, Hot Springs, has resigned as city-county physician and will re-enter private practice.

Dr. and Mrs. Grimsley Graham attended a sectional meeting of the American College of Surgeons in Mexico City during January. They visited Acapulco and Taxco while in Mexico.

Dr. J. J. Monfort, president of the Arkansas Medical Society, was the principal speaker at graduation exercises for the second class of the Batesville Practical Nurse School held in January.

Dr. T. H. Hickey, Morrilton, has officially announced his candidacy for mayor of that city in the city primary to be held in August.

Dr. John W. Morris of McCrory, has passed his 86th birthday, and will round out 61 years as a practitioner in April. Dr. Morris does not plan to retire until he "gets too old to work". He enjoys fishing and bird hunting when time and weather permits.

The Arkansas State Medical Assistants Society membership has passed the 200 mark. Its annual convention will be held in April in El Dorado. A proposed educational program, under the direction of the Extension Department of the University of Arkansas is now in the process of completion.

Dr. Charles L. Weber, Magnolia, was presented a "Certificate of Appreciation" by **A. E. Townsend, Jr.** of Little Rock, president of the Arkansas Division of the American Cancer Society, for his work in the cancer control program of the society. Dr. Weber has headed the society's educational and fund-raising crusade for the past two years, and has helped to make Columbia County one of the leaders in the fight against cancer.

Dr. Mae Nettleship, Fayetteville, has been appointed pathologist and director of the laboratory at City Hospital, in that city. Dr. Nettleship and her husband, **Dr. A. Nettleship**, pathologist at Veterans Hospital, founded the ANL Laboratory in Fayetteville in 1959.

Proceedings of Societies

Officers re-elected for the Lincoln County Medical Society were Dr. James W. Freeland of Star City, president; Dr. Charles W. Dixon of Gould, vice president; and Dr. Richard C. Petty of Star City, secretary-treasurer.

The Ouachita County Medical Society met in regular monthly dinner session at the Camden Hotel in Camden, Tuesday night, January 3, 1961. Dr. J. J. Monfort, president, Arkansas Medical Society, spoke on "Today as Compared to Yesterday".

Dr. Brooks Teeter has been elected president of the Pope-Yell County Medical Society. Dr. W. H. Lane of Dover was named vice-president and Dr. Ernest King of Russellville was re-elected secretary-treasurer.

Dr. R. L. McDonald of McGehee was elected president of the Southeast Arkansas Medical Society at the regular monthly meeting held January 17. Dr. Lee Parker of McGehee was reelected secretary-treasurer. A scientific program was presented by Dr. James Walker and Dr. A. P. Jerome

of Memphis, Tennessee. The development of plastic surgery as a specialty was outlined and a general presentation was made of the specialty as it is practiced today.

Dr. Fred Stone has been elected president of Arkansas County Medical Society, succeeding Dr. C. W. Rascoe of DeWitt. Other officers for the group are Dr. Barrett Sparks, vice president, and Dr. T. S. Van Duyn, secretary-treasurer.

The Chicot County Medical Society elected the following officers for this year: Dr. V. H. Marques of Lake Village, president; Dr. A. G. Talbot of Lake Village, secretary - treasurer; Dr. Major Smith of Dermott, representative to the House of Delegates of the State Medical Convention.

Contributors to the American Medical Education Foundation From the State of Arkansas During January 1961:

Mrs. Frank Adams, Hot Springs	\$ 5.00
Mrs. J. H. Chesnutt, Hot Springs	10.00
Mrs. M. W. Chesnutt, Hot Springs	10.00
Clark County Woman's Auxiliary, Arkadelphia	85.00
Garland County Woman's Auxiliary, Hot Springs	5.00
Garland County Woman's Auxiliary, Hot Springs	15.00
Greene-Clay County Woman's Auxiliary, Paragould	5.00
Washington County Woman's Auxiliary, Fayetteville	5.00
James D. Finrock, Fayetteville	10.00
Walter S. Guinee, Mountain Home	2.00
C. D. Gunter, Siloam Springs	25.00
Robert A. Hayes, Wynne	10.00
J. D. Huskins, Siloam Springs	25.00
Ruth E. Lesh, Fayetteville	25.00
C. C. Long, Ozark	5.00
Robert McCrary, Hot Springs	10.00
Joseph A. Norton, Little Rock	50.00
Carl Parkerson, Hot Springs	5.00
B. J. Puckett, Siloam Springs	25.00
Fount Richardson, Fayetteville	100.00
Warren Riley, El Dorado	8.00
A. W. Roberts, Texarkana	25.00
Floyd A. Smith, Jr., Trumann	10.00
H. King Wade, Jr., Hot Springs	5.00
	<hr/>
	\$480.00

New Members . . .

Dr. Arthur L. Beard is a new member of the Baxter County Medical Society. A native of Lake Village, Arkansas, he received his preliminary education from the Arkansas A&M College from which he received a B.S. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1956. Dr. Beard has practiced at his present location for 2½ years. He is a General Practitioner with his office in Gainesville, Missouri.

A new member of the Baxter County Medical Society is **Dr. Maxwell G. Cheney**. Dr. Cheney is a native of Calico Rock, Arkansas. His preliminary education was obtained at the University of Arkansas. He was graduated from the University of Arkansas School of Medicine in 1957. Dr. Cheney is a General Practitioner and has practiced at his present location in Mountain Home for six months.

A new member of the Polk County Medical Society is **Dr. Calvin D. Austin**. He is a native of Plainview, Texas, and received his preliminary education at Ouachita Baptist College, Arkadelphia, Arkansas. His M.D. degree was obtained from the University of Arkansas Medical School in 1957. Dr. Austin's office is at 606 Mena Street in Mena.

A new member of the Faulkner County Medical Society is **Dr. Bob G. Banister**. Dr. Banister was born in Guy, Arkansas. His preliminary education was obtained at Arkansas State Teachers College from which he received a B.S. degree. He was graduated from the University of Arkansas School of Medicine in 1958. He served his internship at the Arkansas Baptist Hospital and now has his office at Parkway and North in Conway.

A new member of the Franklin County Medical Society is **Dr. Evelyn R. Jones**. She is a native of Winnsboro, Louisiana,

and received her preliminary education at the University of Arkansas from which she received a B.S. degree. Her M.D. degree was obtained from the University of Arkansas School of Medicine in 1955. Dr. Jones practiced in Little Rock for one year and now has her office in Ozark.

Pulaski County Medical Society reported a new member in February. He is **Dr. Lee A. Martin**, whose specialty is Urology. He is with the University of Arkansas Medical Center. A native of Jackson, Tennessee, he received his preliminary education at the University of Arkansas from which he received a B.A. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1954. Dr. Martin was in the U.S.A.F. at Del Rio, Texas, from 1955-57 and has been at his present location for the past four years.

Dr. James Kelly Cornett is a new member of the Pulaski County Medical Society. A native of St. Paul, Arkansas, he received his preliminary education in San Antonio, Texas, and was graduated from the Tulane School of Medicine, New Orleans, Louisiana, in 1959. Dr. Cornett has

ANSWER TO WHAT'S YOUR DIAGNOSIS?

78-year-old colored female. There had been a lump on the patient's forehead for at least one year, recently causing deviation of the right eye. She complained of severe headaches for two months. Palpation of the mass revealed it to feel cystic, it was not tender and no bruit was heard.

ANSWER: Mucocoele of the frontal sinus.

X-RAY FEATURES—There is a large sharply outlined lytic defect involving the right frontal bone apparently caused by outward expansion of the mass growing within the frontal sinus itself. The right orbit is depressed and its roof eroded. The appearance would suggest that the lesion has been there for a very long period of time.

practiced in Little Rock for the past two months. His office address is 623 Beech Street.

Woman's Auxiliary

Mrs. Brooks Teeter was hostess January 12 for the monthly meeting of the Pope-Yell Medical Society Auxiliary at a dinner in Neumeiers' Restaurant, Russellville. Mrs. Martin Heidgen, vice president, presided over the brief business session in the absence of the president, Mrs. Louis Drager. Mrs. Walter O'Neal of Little Rock was a guest.

Mrs. Paul Gray attended a council meeting on rural health held in February at the Palmer House, Chicago, Illinois. Mrs. Gray is area chairman of the rural health committee of the National Woman's Auxiliary to the American Medical Association.

The Independence County Medical Society and Auxiliary met Tuesday evening, February 14, for a dinner meeting at the Marvin Hotel, Batesville. Program chairman for the Society, Dr. Paul Gray, presented Dr. and Mrs. T. W. Williams of Newport, who gave a most interesting program on antique glass and porcelain. The highlight of the program was the showing of many pieces of cut glass and many types of porcelain from the Williams' private collection.

Following the program, the Auxiliary adjourned to the home of Mrs. J. J. Monfort, for a business meeting. Mrs. Glen Keller, Mountain View, presided at this session. Election of officers was held. The present officers were re-elected to serve another year. They are as follows: President, Mrs. Keller; vice president, Mrs. Jim Lytle, Batesville; secretary, Mrs. Charles Taylor, Batesville; and treasurer, Mrs. Chaney Taylor, Batesville.

Hostess for the event were Mrs. Monfort, Mrs. R. L. Calaway, and Mrs. Bob Slaughter.

Book Reviews

THE PHYSIOLOGY OF MEDICAL PRACTICE.

Marc H. Hollender. W. B. Saunders Co. Philadelphia—London. Pp. 276. 1958.

The medical student and the interne will enjoy reading this book. It is easy reading and informative. This book is endorsed as being thoroughly worthwhile within its purported scope. AKJ

PRACTICAL LEADS TO PUZZLING DIAGNOSES.

Walter C. Alvarez. J. B. Lippincott Company. Philadelphia, Pa. Pp. 490. November, 1958. \$9.00.

This book is a very interesting series of discussions concerning some difficult problems seen by a physician of very wide experience. It is in no sense a textbook. This type of book is one that could be thumbed through and read as casual reading from time to time. It tends to stress psychosomatic medicine. It is written in an easy, readable style. It is recommended as casual reading but not as a textbook. AKJ

FUNDAMENTALS OF CHEST ROENTGENOLOGY,

by Benjamin Felson, M.D., Professor and Director, Department of Radiology, University of Cincinnati College of Medicine; Director, Departments of Radiology, Cincinnati General, Children's, Daniel Drake, Dunham, Christian R. Holmes, and Longview Hospitals; Special Consultant, United States Public Health Service; Consultant to the Dayton and Cincinnati Veterans Administration Hospitals, illustrated, pp. 301, published by W. B. Saunders Company, Philadelphia and London, 1960.

This textbook of chest roentgenology is well written and quite well illustrated. It is by no means to be considered encyclopedic; on the other hand, it is reasonably complete. There is virtually no discussion of the heart and this is regrettable in view of the vast amount of work being done in the field of angiocardiology. This book will be of special interest to the general physicians, the internist, and the medical student. It would provide background information. It would also prove of value to anyone interested in pulmonary disease but not exclusively devoting their time to it.

AK

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

EXPERIMENTAL EFFECT OF CIGARETTE SMOKE ON HUMAN RESPIRATORY CILIA

JOHN J. BALLENGER, M.D., *The New England Journal of Medicine*, October 27, 1960.

The mechanism of the efficient housekeepers of the lower respiratory tract and the nose, the cilia, is interfered with by the smoke from a cigarette, as illustrated in the experiment described. The slackened efficiency of the cilia appears related to the cough of smokers.

The purpose of the experimental work reported in this manuscript is to demonstrate a possible mechanism whereby tar and other combustion products in cigarette smoke might be deposited in the lower respiratory tract of human beings. An impressive body of literature has accumulated to support the thesis that prolonged heavy cigarette smoking is positively related to the increased incidence of bronchogenic carcinoma.

If the combustion products in tobacco smoke contain carcinogenic tars (or arsenic), how does this substance collect in the bronchi and remain sufficiently long to induce a carcinoma? Normally, the respiratory cilia are most efficient in keeping the nose and the bronchial air tubes clean. The cilia of the lower respiratory tract are in constant motion, day and night, sweeping the overlying blanket of mucus toward the upper end of the esophagus. In the nose, the action of the cilia moves the mucous blanket posteriorly to the pharynx.

Failure of the cilia to beat efficiently brings about a stasis of the blanket of mucus and permits injurious material contained in the mucous blanket to remain in contact with the bronchial or nasal surfaces. In health the continuous beat of the cilia is the principal mechanism whereby the posterior two thirds of the nose and

the entire lower respiratory tract keep themselves clean.

MEASURING CILIARY ACTIVITY

The question arose whether or not there was some substance in cigarette smoke that caused a stasis of the ciliary cleansing mechanism. Experimental setups designed to measure the effects of various substances on ciliary activity have always lacked an accurate criterion to measure this activity. The ciliated cells must constantly be bathed in physiologic wetness. Dryness rapidly injures the cilia and destroys the accuracy of measurement. Whatever method is used must accurately provide for humidity control. An attempt to measure ciliary activity in the isolated epithelial strip and in vivo was greatly hampered by this factor.

In the method used by me, minute bits of epithelium taken from the trachea and bronchi of humans are placed in a clot (equal parts of chick embryo extract and chicken plasma) which is adherent to a cover slip. When properly made, the cilia can be seen through the microscope to be beating furiously and will continue beating for two weeks or longer with no further attention. At any time the cover slip and clot may be transferred to a perfusion chamber; the experimental solution may be perfused, and the effect on the cilia observed and recorded on moving-picture film.

Sometimes immediately and sometimes some hours later, aggregates of ciliated cells can be seen through the microscope to have become detached from the main explant to form an irregular rounded mass with the cilia outward. The furiously beating cilia cause the separate aggregate of cells to rotate 6 to 30 times per minute. The rotation serves as a convenient quantitative criterion of ciliary activity.

CIGARETTES MECHANICALLY SMOKED

The clot containing the rotating groups of cells is first bathed in the basic salt solution, and the speed of rotation of the particular explant selected for experimentation is observed and recorded on moving-picture film exposed at 16 frames per second. A "baseline" rotation speed is thus obtained. Next, perfusion is carried out

with the test solution, and the effect on the speed of rotation observed and recorded on moving-picture film exposed at 16 frames per second. A quantitative comparison can thus readily be made between the baseline observations and those after perfusion with the test solution.

The test solution for these experiments was prepared as follows. Two "regular"-sized cigarettes were mechanically "smoked" by intermittent drawing of room air through the cigarettes at a rate of 1 liter per minute. Approximately one and a half to two minutes were required to "smoke" each cigarette. The smoke was allowed to escape under the surface of 100 ml. of the basic salt solution. A sintered glass filter was used to insure good contact of the smoke and the solution. Glass-wool filters were inserted in two locations to prevent gross particulate tobacco from reaching the basic salt solution. In successive experiments cigarettes, both with and without "filters," were used.

The basic salt solution changed from colorless to slightly amber. In the solutions tested, the pH dropped from approximately 7.76 to 7.38. All solutions used were at room temperature.

Perfusion with the basic salt solution alone caused no appreciable change in the rotation of the aggregates of ciliated cells. If left undisturbed, rotation would have lasted for 36 to 48 hours.

Perfusion with the "smoked" basic salt solution stopped rotation within five to 28 minutes in 12 consecutive experiments. In some cases if the exposure to the "smoked" basic salt solution was terminated before the toxic effect was marked, return to the baseline speed of rotation could be produced by reperfusion with salt solution alone.

EFFECT OF TAR

It is known that tar from cigarette smoke painted on the skin of a mouse for a third to a half the lifetime of the animal can induce skin carcinoma. It seems reasonable to assume that a similar development could occur on the bronchial mucosa of man if the tar (or other carcinogens) are in contact with the same part of the mucosa for a sufficiently long time. The present experiments demonstrate how the

FEATURES

human ciliary mechanism fails in vitro when exposed to smoke in solution from as few as two cigarettes. The failure of the ciliary mechanism was irreversible if great care was not taken very soon to remove the "smoked" basic salt solution. It is suggested that this is one of the mechanisms whereby tars may collect in the lower respiratory tract and come into contact with the mucosa.

If the person concerned is a heavy and persistent smoker, the tars may be assumed to stay in contact with the bronchial mucosa for longer periods. Further experimental work is currently going on to determine if combustion products of petroleum, factory gaseous wastes, and so forth, have similarly deleterious effects on the cilia.

It seems likely that the decreased efficiency of the ciliary mechanism caused by smoke plays a part in the productive cough noted by smokers. If the cilia do not keep the airway clean, the blanket of mucus containing foreign material collects and eventually initiates the cough reflex.

LETTERS TO THE EDITOR

February 18, 1961

CBS Reports, CBS News
485 Madison Avenue
New York 22, New York

Gentlemen:

I observed the program of "CBS Reports: The Business of Health—Medicine, Money and Politics," on Thursday, February 2nd.

I have never in my life seen a worse representation of feelings of the doctors of the American Medical Association in my life. I think that this was grossly misrepresented, was slandered and I resent it terribly. If there is anything I can do to harm your report, I will do so. I have never expected to see such a biased report without representation from the Medical Association unless it was conceived by the socialist group.

Yours truly,
J. J. Monfort, M.D.
President
Arkansas Medical Society

JJM:plp

cc: Mr. Paul Schaefer, Exec. Secy.

Alfred Kahn, M.D.
Fount Richardson, M.D.
Joe Verser, M.D.

Bilirubin Metabolism and the Differential Diagnosis of Jaundice*

J. R. SNAVELY, M.D.**

As reviewed by Billing and Lathe in a superb summary (1) of the problem of bilirubin metabolism, jaundice was described as early as 400 B.C. by Hippocrates, and ever since has distressed patients, and has perplexed and intrigued physicians. When van den Bergh and Snapper applied Ehrlich's specific urine test for bilirubin to plasma, quantitation of blood levels became practical, and with the accidental discovery that there were two kinds of reaction, "direct" and "indirect", the probable existence of at least two kinds of bilirubin in the plasma in disease was indicated.

Evelyn and Malloy adapted the measurement of the "quantitative van den Bergh" to the photoelectric colorimeter, and described a relatively simple method for the estimation of the two types of reaction which has become the standard technique with small modifications, in most laboratories (2). In this, all of the color developing in alcohol, in an optimal period of time is measured as the total serum bilirubin and is the standard index to the depth of icterus. In another test is measured that amount of color which develops in one minute without alcohol, and this is called the one minute direct bilirubin. The difference may be considered to be the "indirect or delayed" bilirubin, but these terms lack precision.

Numerous classifications of the causes of icterus have been devised, but all are

modifications of Richs retention-regurgitation scheme (3) which continues to be most serviceable, and is easily adapted to accommodate new knowledge.

In 1953 Cole and Lathe applying reverse phase partition chromatography on silicone treated kieselguhr separated two protein free pigments (4), and almost simultaneously and independently others made the same discovery. From many laboratories confirmation and extension of these observations have been rapidly forthcoming, and have completely revolutionized our understanding of bilirubin chemistry. The following oversimplification forms the basis of the classification to be presented:

1. Most (but not all) hemoglobin becomes bilirubin as red cells break down.

2. Bilirubin in the gut becomes urobilinogen, but there are sources of urobilinogen other than circulating hemoglobin.

3. There are at least 3 chemical varieties of bilirubin which may appear in the plasma:

- a) "free", unconjugated, or "just plain" bilirubin,
- b) bilirubin monoglucuronide, and
- c) bilirubin diglucuronide.

4. There are other esters of bilirubin, and the conjugation to diglucuronide occurs only in the liver. Monoglucuronide conjugation can occur extrahepatically, but for the purpose of our classification, monoglucuronide will be disregarded, and bilirubin will be considered as conjugated (diglucuronide), to which the one minute direct bilirubin is an index, and free, or

*Presented at the Annual meeting of the Arkansas Medical Society, Pine Bluff, Arkansas April 18-21, 1960.

**Professor and Chairman, Dept. of Medicine, University of Mississippi Medical Center, Jackson, Miss.

unconjugated, to which the level of the total minus the one minute direct is an index.

Jaundice if characterized by the accumulation of unconjugated bilirubin is called retention jaundice, and if characterized by accumulation of conjugated bilirubin is called regurgitation jaundice, because the pigment, having been conjugated in liver cells, is regurgitated back into the blood.

In the table the various disease states which may be associated with the symptom icterus are arranged under certain headings depending upon the nature of the disturbed bilirubin chemistry, and the remainder of this paper will deal with the clinical recognition of these entities.

In retention icterus in general, bilirubin is absent from the urine, total serum bilirubin is elevated, the one minute direct bilirubin is relatively low, and the scene is dominated by unconjugated pigment.

In the various hemolytic states evidence of anemia, of blood destruction, and absence of bilirubinuria will usually indicate the nature of the process, and these entities will not be discussed further.

In "shunt icterus", the possibility that unconjugated bilirubin excesses are derived from sources other than circulating red cells, such as destruction of immature red cell precursors, has recently been revived (5) and such a mechanism may account for the low grade icterus of pernicious anemia.

Physiologic icterus of the new born is now thought to be associated with "immaturity" of the conjugation excretion mechanism, and when this immaturity is combined with acute and massive hemolysis, as in icterus gravis with Rh antibodies, catastrophic disease results, with severe brain damage.

In Gilbert's disease, or constitutional hepatic dysfunction, defective conjugation is manifested as chronic low grade icterus with completely normal liver function tests, a negative liver biopsy, no hemolysis, and no symptoms as a general rule (6).

A rare, but interesting entity is a syndrome described by Crigler and Najjar (7) in 1952. Children with this disease have

deep jaundice, and often (though not invariably) signs of grave central nervous system damage—kernicterus. That this and Gilbert's disease are separate entities, or are different degrees of a similar process remains to be established.

Troublesome indeed are those patients who after an attack of classical hepatitis persist with chronic mild icterus of "indirect" type. Many of these patients have normal tests of liver function, have normal biopsies, and no symptoms. Rather uneasily, one considers them as post-hepatic conjugation disturbance, but the possibility of smoldering active hepatitis is difficult to exclude. Prognosis, however, appears to be excellent.

An occasional patient receiving novobiocin shows an asymptomatic chemical indirect hyperbilirubinemia which subsides uneventfully when treatment is stopped. Whether this represents impaired conjugation or a bilirubin-like metabolite of the drug is unknown.

Time does not permit a detailed discussion of the differential diagnosis of regurgitant jaundice. The class as a whole is characterized by the presence of bilirubinuria (the conjugate is water soluble and is excreted in the urine), and of course, in the blood the predominant pigment is the glucuronide. Stools are light in color or not, depending on the amount of diversion. In the cellular, or hepatocellular varieties the cephalin and thymol tests tend to be positive, the SGOT elevated into the thousands, and the alkaline phosphatase to be only modestly elevated if at all, to 5-10 Bodansky units.

With obstruction, and by inference, with essentially intact cells, cephalin and thymol tests tend to be negative, SGOT levels elevated in the low hundreds, and the alkaline phosphatase to be elevated above 10, and often 20 or more.

The trend of a few carefully performed, cautiously interpreted tests is much more important than the result at any single moment, and far fewer mistakes will result if a few simple tests are repeated than if a mass of procedures are performed infrequently.

A kind of "idiopathic" jaundice described by Dubin and Johnson, and by Sprintz and Nelson can offer diagnostic difficulties (8). Here chronic low grade

jaundice of the "direct" variety is associated with weakly positive liver tests and with failure of the gall bladder to opacify. There is bilirubinuria with conjugated pigment in the urine, and the diagnosis is made by liver biopsy, where parenchymal cells are found to be studded with a coarsely granular known pigment most dense in the centrolobular region.

For completeness, and entity reported by Rotor et al is mentioned (9). These patients resemble the above, but do not have the pigment in liver cells, or the failure of gall bladder visualization.

There is a form of regurgitant jaundice in which mechanical obstruction is absent, but wherein most of the chemical signs of block are present: negative cephalin test, elevated alkaline phosphatase levels, and a rather protracted course. This is known as intrahepatic obstructive, or cholestatic or cholangitic icterus, and is encountered occasionally as a reaction to certain drugs, especially chlorpromazine, and less frequently as a manifestation of infectious hepatitis. Liver biopsy is not always helpful, and exploration may be required in patients whose icterus shows no sign of remission after three or four weeks. Usually the course is short enough that resolution has begun by the time this step is seriously entertained.

Most patients with acute, deep, regurgitant jaundice will have hepatitis, cirrhosis with jaundice, or mechanically obstructive jaundice. In the absence of chills and fever, which might indicate the presence of ascending bacterial cholangitis, a two-week period of observation is advised. During this period, at about five-day intervals, a panel of simple tests is repeated. We have found most useful the cephalin, the alkaline phosphatase, and the total bilirubin. The trend (not the momentary status) of these tests in conjunction with close observation of the patient, his urine, and his stools, will usually indicate the nature of the process causing the jaundice. Fewest errors are made if a few well performed tests are repeated serially and interpreted cautiously in conjunction with the clinical

picture. Emergency surgery is almost never indicated.

Table

I. RETENTION.

- | | |
|-------------------|---------------------------|
| A. Hemolytic: | 1) Hemolytic anemias |
| | 2) Icterus gravis |
| | 3) "Shunt" icterus |
| B. Non-hemolytic: | 1) Icterus neonatorum |
| | 2) Gilbert's disease |
| | 3) Crigler—Najar syndrome |
| | 4) Post hepatic states |
| | 5) Novobiocin icterus |

II. REGURGITATION.

- | | |
|-----------------|---|
| A. Cellular. | 1) Viral hepatitis |
| | 2) Other hepatitis |
| | 3) Cirrhosis with jaundice |
| | 4) Severe C.P.C. |
| | 5) "Idiopathic" jaundice |
| | 6) Rotor syndrome |
| B. Obstructive. | 1) Intrahepatic — cholestatic cholangitic |
| | 2) Extrahepatic — Stones — cancers—strictures |

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A Common Sense Approach to the Problem Of the Hazards of Radiation Fall-Out And Diagnostic Radiology**

ISADORE MESCHAN, M.D.*

INTRODUCTION

The hazards of excessive radiation of the x-ray and gamma type have been known to physicians for many years. Indeed, even the genetic hazard resulting from such radiation has been known for over 30 years when Dr. Muller, while experimenting with fruit flies, realized that ionizing radiation increased the mutation rate in direct proportion to the irradiation exposure.

In recent years, concern over the radiation has been markedly increased by publications from the National Research Council and from the British Medical Research Council.

Before one can attempt to understand the overall problem in its entirety and approach a solution to this problem with a certain amount of common sense, there are basic questions which must be raised and answered. These are:

- 1) Ionizing radiation—what is it?
- 2) What are the biologic affects of such ionizing radiation which are of interest to us particularly?
- 3) What are the sources of radiation exposure to the population at large, so that we may begin to delimit these sources whenever and wherever possible?
- 4) Assuming that a certain dose of ionizing radiation is inevitable in our population, how much dose and therefore how much hazard is involved?

It is my purpose in the present paper to take each of these questions in turn and attempt to answer them briefly so that perhaps a more common sense approach to this problem can be achieved.

IONIZING RADIATION—WHAT IS IT?

The ionizing rays of which we speak are part of the electromagnetic spectrum

much like ordinary light rays except that they have extremely short wave lengths and have the power to penetrate matter. In so doing, these rays “shake-up atoms,” in some cases causing a liberation and displacement of electrons from the atomic structure. This “shake-up” of the atoms and liberation of electrons from the atomic structure would have no serious implication to us if it were not for the fact that, coupled with this physical affect upon matter, there is an adjoining and marked biological change which results. Basically, it is this biological change which is of greatest importance to us.

The ionizing rays are of four major types:

1) Alpha rays are composed of particles which are identical with the nuclei of the helium atom and which have two neutrons and two protons within each particle. These particles, being rather heavy, are unable to penetrate matter very far and can ordinarily be absorbed even by a sheet of paper. The unusual attribute of these particular rays is the fact that they have an extremely great ionization power, perhaps 100 times or more greater than some of the more penetrating rays which we will describe later. It is this extremely high ionizing power of the alpha rays which makes this type of ray extremely dangerous if this ray is found within the body due to imbibition or food intake. On the other hand the external application of such alpha rays is without very great hazard.

2) The second type of ionizing ray is the beta ray which, unlike the alpha ray, consists of minute particles called “electrons.” Electrons are so infinitesimal in size and weight that, for all practical purposes, they may be considered weightless. They contain a negative charge in contrast to the alpha particles, which have a positive electrical charge. In general,

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**Presented at the Annual meeting of the Arkansas Medical Society in Pine Bluff, Arkansas, April 18-21, 1960.

beta rays have the power to penetrate organic tissue to an average depth of approximately 1 mm. or less usually. This, of course, is tremendous penetration by comparison with the alpha rays, but not very penetrating nevertheless. Here, too, the greatest biological hazard which results from such penetration is from imbibition and food intake. The external application of the beta ray should not be too serious although considerable erosion of the skin can occur to a depth of approximately 1 mm. It is also interesting that the more penetrating a ray, the less is its ionizing power. In contrast to the alpha ray, the beta ray has approximately 1/10 the ionizing potential of the alpha ray.

3) The third type of electromagnetic ionizing radiation is the x-ray and gamma ray. Unlike the previously two mentioned ionizing rays, these are not particulate and travel in waves which are extremely short and highly penetrating depending upon their energies. These will ordinarily penetrate several millimeters or even centimeters in organic matter. Indeed, the heavier and more energetic gamma rays will penetrate many inches of concrete and several inches of lead. In accordance with the general rule, the x-rays and gamma rays have a lesser ionizing potential than do either the alpha or beta rays, but they have a much greater penetrating power, so that by external application of x-rays or gamma rays, one can achieve considerable biological change in tissues at a depth. The internal imbibition or food intake of materials containing these rays is not quite so hazardous as in the case of the alpha or the beta rays. The ionizing potential of the x-rays and gamma rays are in the order of one per cent or less of the alpha rays and ten per cent of the beta rays.

4) The fourth type of ionizing radiation arising particularly in radioactive fall-out is that consisting of particles which are not electrically charged called "neutrons." These are derived from the fission of certain types of uranium atoms particularly, and hence are important from the standpoint of their being an occupational hazard in the realm of atomic power and industries employing uranium piles. These particles penetrate and

ionize matter very readily. By comparison with gamma rays, neutrons ordinarily have a much greater biological effect by a factor of two or more.

Physicists have proposed various measurements for the ionizing potential of radiation but in general the basic units of such measurement evolve about the so-called "roentgen" which is a measurement of the amount of ionization produced in one cubic centimeter of air under standard conditions of temperature and pressure and this measurement is made in relation to the amount of electricity which is produced by the ions within this small volume of air. In order to relate the biological effect of one type of irradiation to another, physicists have also proposed another unit which they call the "REM." This is a quantity of any type of irradiation which produces the same biological damage in man as that resulting from the absorption of one roentgen of x- or gamma radiation. It is the REM then which relates the ionization of the alpha, beta, x-ray, gamma, and neutron radiation one to the other.

There is still one further unit which the physicists have more recently proposed, and this is called the "RAD." One RAD is any type of ionizing radiation accompanied by an absorption in one gram of any kind of medium of 100 ergs of energy.

The roentgen, the REM and the RAD are three of the basic quantitations of radiation which are now appearing more and more in the literature of radiation and which have achieved complete acceptance. We are constantly hearing references to the milliroentgen and the millirad which represents 1/1000th of the basic unit. There are other units of irradiation which we need not mention here which are of lesser importance and which have not achieved a wide-spread acceptance. It is important to emphasize, however, that all of our future quantitations of the hazards of radiation are based upon the physical concepts and dimensions.

THE BIOLOGIC AFFECTS OF RADIATION

Biochemical affects:

Whereas the physicists are primarily interested in what happens to the atom as the result of penetration by ionizing radiation, the radiation biologist ordinarily

ily begins his interest with the penetration of the single molecule, and thereafter the single living cell.

It is observed by the radiation biochemist that ionizing radiation acts extremely rapidly, in the order of one-one-hundred-millionth of a second, producing ions and certain unusual free chemical radicals, particularly in relation to water. In the course of perhaps another one ten-thousandth of a second, there is the formation of peroxides, the rupture of chemical bonds, the inactivation of certain enzymes, and the activation of other molecules, so that there is a considerable change in the biologic systems in this extremely short interval of time. Certain pathological changes ultimately are observed at much later intervals. There have been many theories proposed as to the exact mechanism behind the damage by radiation as the result of this chemical behavior. Suffice it to say that none of these mechanisms has achieved widespread acceptance. After these extremely short-lived radiation phenomena, certain biochemical observations can be made.

Thus, for example, there is a disturbance in the nitrogen balance of the irradiated mechanism. There is an increased nitrogen excretion after whole-body radiation so that there is a negative nitrogen balance with increased protein nitrogen in the urine, and a decrease in weight of the intestines. This is all probably due to an increased destruction of the proteins.

Ordinarily, within the blood, one may demonstrate a decreased gamma globulin concentration and generally a decrease in albumin, with an increase, however, in the ratio of albumin to globulin. Some biochemists have pointed to certain changes in the serum polysaccharides, but this of course is very non-specific.

Other biochemists have pointed to changes in the serum and tissue lipids and lipo-proteins, with an increased fatty liver following radiation. It has been demonstrated that there is an increase in the cholesterol and cholesterol esters following radiation.

Of particular interest to the radiation biochemist have been the changes which occur in the nucleic acids since the nucleic acids carry the genetic factors, and are the backbone of biologic systems. In gen-

eral there is a decrease in the content of nucleic acids following irradiation, with the cause unknown and ordinarily both the DNA and the RNA, which are the two main nucleic acids, are lost at the same rate. This diminution following irradiation has been demonstrated particularly with the experiments in which there has been an incorporation of radioactive phosphorous into the nucleic acids and their precursors. It has been shown that there is a definite diminution or blockage in the synthesis of DNA and RNA at certain points, but actually all precursors are not necessarily blocked.

So far as enzymes are concerned, at least some 100 have been studied in both the sensitive and resistant tissues and many varying demonstrations have been made.

For many years the effects on water and electrolytes have been studied. We know that hydrated material is more sensitive than dehydrated material in the plant kingdom, and we also know that many of the effects on biological material are directly related to the formation of various peroxides, both organic and inorganic.

Radiation Genetics:

These concepts of radiation biochemistry are particularly important when we begin to talk about the genetic effects. Basically, the geneticist considers that a "gene" is a complex biochemical conglomerate of molecules arranged in series in somewhat linear or curvilinear fashion in a structure known as a "chromosome." The individual biochemical complexes on the chromosome are spoken of as "genes." When a gene is altered by irradiation it is as though an enzyme for which this particular gene may be responsible is also altered and this enzyme is part of a metabolic process, the end result of which often produces the observable change. The end result, however, may not be observed for a considerable period of time thereafter, or even generations later. The change in the gene, which is a biological and biochemical entity is spoken of as a "mutation."

The changed biochemical molecule which constitutes the gene, may persist for many generations thereafter depending upon whether or not it is ultimately

bound up with the life survival process. It is indeed fortunate for mankind that most genes are paired and hence two in number; if one is failing, the other may take over sufficiently so that no deleterious end effect is observed. In such instances, where there is one good gene and one bad one, ordinarily the good gene is dominant and the bad one or defective gene is recessive. For practical purposes one good gene is sufficient for the individual. The trouble arises however when two bad genes come together in the mating process, hence the bad biochemical or enzymatic process so initiated becomes manifest in the individual.

In man, all of the genes are carried on 48 chromosomes, 23 of which are in identical pairs making a total of 46; the 24th pair, however, not being identical in some individuals in the following manner:

In males, one chromosome of this 24th pair is a so-called "Y chromosome" which carries no genes, and the other an "X chromosome." In females, there are two "X" chromosomes. In males, one is virtually completely dependent upon the "X" chromosome for all genetic characters in this pair. If there be any bad genes or biochemical processes on this one X-chromosome it may come to the fore. This is the so-called "sex-linkage" phenomenon in genetics which is intimately related to such processes as color blindness, hemophilia, and certain muscular dystrophies. In experimental animals, some genes are even "sex-limited" and a given affection is limited by a peculiarity of that sex. Thus for example, mammary carcinoma in the mouse is a sex limited genetic character.

The geneticists describe for us that there are various methods of changing genetic constitution in whole populations. These methods are constantly in operation both related and unrelated to the irradiation around us. Ordinarily they operate at fairly specific rates in the whole population.

These changes in chromosomal or genetic constitution may be summarized as follows:

- 1) Change in a whole set of chromosomes: This is particularly common in higher plants and occasionally occurs in some of the lower

animals. It very seldom ever occurs in man and is rarely accomplished by radiation. It is possible however that occasional unusual syndromes in man are related to this phenomenon. One such syndrome is "Klinefelter's Syndrome" which consists of small testes, enlargement of the breasts (gynecomastia) and low mentality. In Klinefelter's syndrome, the 24th so-called "pair" of chromosomes consists of 2 X's and a Y instead of either two X's, or an X and a Y alone.

In another syndrome called "Turner's Syndrome" which occurs in an apparent female with a short webbed neck and inability to straighten the elbow, these individuals are found with no uterus. Instead of having 48 chromosomes, these individuals have 47. The 47th chromosome may either be a Y, which would make the individual a poorly developed male, or an X, which makes the individual an apparent but poorly developed female.

It is also believed that some mongoloids have an abnormal number of chromosomes and this occurs particularly in those mongoloid children who are derived from mothers of increasing age. This may also occur in certain bone abnormalities such as achondroplasia.

Man is not the only higher animal which is affected by these changes in whole sets of chromosome, but this also occurs in mice, pigs and goats as well.

- 2) The next group of changes which may occur to chromosomes is related to a *change in a portion of a chromosome* either due to duplication or deficiency. A deficiency of a portion of a chromosome is perhaps the most common genetic aberration as the result of radiation. In this instance an entire gene or region of a chromosome is knocked out and then the ends of the chromosomes re-unite to form the complete chromosome but without the "knocked out" gene. Such mutations are therefore irreversible theoretically. Duplication is rare. In this instance a portion of one chromosome is stuck on to another, usually crossing over it at identical sites.

- 3) Still another type of chromosomal aberration is a *re-arrangement of the chromosome* due to a phenomenon called "inversion" or "translocation." This occurs at a remarkably low rate naturally but can be produced by ionizing radiation. In inversion, there is a change in the order of the genes in one small segment of the chromosome, and whereas, ordinarily, we might say that chromosomes are arranged as are the letters of the alphabet: A, B, C, D, E, F, G, H, I; in this inversion process, one segment becomes turned around so that now the genes are arranged: A, B, C, F, E, D, G, H, I. In translocation, there are entire segments of the chromosome of one part of a pair which become re-united to the adjoining chromosome in abnormal fashion.
- 4) The last type of aberration of chromosomes is called "point mutation," or that type of mutation which is related to a part of a chromosome, but involving more than one gene. Such point mutations may be related to an intermediate chemical substrate change such as organic peroxide rather than a direct hit of the chromosome by the radiation itself. On the other hand, a direct hit upon a sensitive gene molecule may also occur and account for this.

As a general rule, for reasonably low doses of radiation, the increase in frequency of mutations is linear with respect to radiation, in doses up to about 1,000 roentgens. Hence, this pertains only to point mutations and single event phenomena. The chromosomal aberrations of the other categories involving whole chromosomes, or whole segments of chromosomes, usually involve two hits by radiation photons and do not follow a linear relationship with radiation dose. In general, mutations on the whole are retrogressive phenomena and may be recessive. It is fortunate from the genetic standpoint, that the process of selection or losing a mutation from the population often involves death or sterility, and thus there is a disappearance as well as a build-up of mutations at a constant rate.

It is important to the human race that the disappearance of mutations keeps pace with the build-up.

In connection with the genetic problem, just a brief mention of the fall-out problem is advisable here. Strontium-90 (a pure beta emitter) is of no interest genetically since it goes to bone in the male and in the female it is far enough from bone to be relatively inconsequential. Cesium-137 is really the most common radioisotope from fall-out found in the gonads of both sexes, since it behaves chemically like potassium. Carbon-14 may be deleterious because it has a long half-life and it is constantly accumulating in the stratosphere with occasional fall-out. It should be emphasized however that the great emphasis upon Strontium-90 in the fall-out probably has no significant genetic importance although it could conceivably have some affect upon the bony development of individuals if it accumulated in the bones in large concentrations.

With regard to actual fertility in humans, and the affect of radiation on the gonads, little can be said except that it requires in excess of 625 roentgens delivered to both ovaries within a few days to produce permanent amenorrhea even in a woman approaching the menopause. The effects upon the ovaries in this regard are directly related to the age of the individual so irradiated and the proximity to natural menopause. To produce complete aspermia in man, an even higher dose is required and here there is a differential affect upon the sperm forming cells themselves, as against the supporting membrane to the sperm. The data in experimental animals would seem to indicate that effects on the ovaries of mice are observed with 1.1 roentgens per day over long periods of time and on the testicles in dogs and mice with $\frac{1}{2}$ roentgen to 1 roentgen per day.

A British study fostered by the British Research Council estimates that only about 1% of mutant genes are dominant and cause damage in the next generation. From calculations based on theory, about 10% of germ cells at the present time carry a new mutation. Hence doubling the mutation rate might lead to an increase of one in 1,000 or $\frac{1}{10}$ of 1% in

the number of harmfully affected children in the next generation.

To carry our calculations further: The usual estimate is that about 2% of all babies have some observable genetic defect at birth while a considerable number develop disease or abnormalities in which hereditary constitution is a preponderant cause. The consequence of one generation of parents exposed to 10 roentgens in the United States, if we apply the above assumption, would be that with the present births of about one hundred million babies per generation, there would be four hundred thousand babies with new severe genetic defects instead of two hundred thousand as at present. These would be spread over many generations with perhaps 10% occurring in the first generation, or 40,000 severe defects. This would be an increase of approximately 1,300 severe defects per year. Of course the factor of uncertainty in this calculation is very high.

At the present time the British report estimates that the risk that a pair of parents will produce an imbecile or idiot with severe mental defect to survive is about one in 500. The increased proportional risk for parents in both of whom the mutation rates have been doubled, is calculated to be about 3%. This means that the risk of having a child with severe mental defects who would survive would be one in 485 instead of one in 500. This is based upon the concept that the genetically significant dose will be that which is delivered to the gonads of individuals under 30 years of age.

The National Academy of Sciences Genetics Committee reports that roughly one child in 20 would have an additional mutation if the whole population of the United States now received a genetically significantly gonad dose of 10 roentgens. Again I would emphasize that the uncertainty of this estimate is great and at least by a factor of 10.

It should be further emphasized that there are many factors other than radiation which cause genetic damage in laboratory animals, such as temperature, oxygen tension, and various chemicals. Studies suggest that mutational changes induced by radiation in the germ line materials of the past generations may com-

bine with the mutational changes induced by radiation in the body some of the present generation to influence the time of death. This likewise is most uncertain.

It is interesting that despite all of these marked disparaging pronouncements of geneticists and physicists with respect to damage which results from radiation in experimental animals, that, in results published by one physician (Kaplan) who in time past found that irradiation was helpful in converting anovulatory women to ovulation and hence to pregnancy; and who delivered as much as 60 to 100 roentgens to each ovary in order to accomplish this; in 644 married women, followed from one to thirty years, the incidence of genetic damage to the children and grandchildren of this group is less than that in the normal population. The author in this particular series has now followed three generations of individuals so treated.

In summary of the radiogenetic problem, we may say that some mutations occur at a natural rate, persisting or disappearing as the case may be. These mutations are of the several types described, related to the chromosomal and gene structure of the reproductive cells. Each gene is capable of catalyzing or controlling a certain metabolic function or characteristic. As a result of radiation, the mutation rate is increased due to either a direct hit on a gene, or segment of a chromosome, or an indirect chemical process forming hydroxy radicals and hydrogen peroxide. In any case, either as a result of a direct hit upon the gene, direct two hits upon the chromosome, or the indirect effect upon the gene as a result of this chemical behavior, there may be an inactivated change and a failure of enzyme action. There may also be an abnormal mitotic or reproductive behavior of the cell even giving rise to tumors. In some instances, the individual may be so abnormal as not to survive. This is undoubtedly the case in a great number of instances, and particularly is true in the case of the fruit fly, where it is possible that as many as 90% or 95% of radiation induced genetic mutations will not survive and will not re-populate. On the other hand, there is another group of mutations which will survive, possibly

being recessive in most generations, being overshadowed by a dominant paired normal gene. In certain individuals two abnormal genes may come together as the result of mating. As a result of both genes being abnormal in a given pair, an abnormal process may result in the individual, which is usually deleterious or an undesirable character.

Despite these many ominous predictions and calculations of the geneticists and physicists however, experimental data is lacking which proves that doses of irradiation of the order of which we speak, are sociologically significant.

The General Biologic Affects of Radiation:

We leave this area of radiogenetics and radiochemistry with minimal review, and touch upon the differences of biologic effects of radiation on different cells. For reasons not entirely understood we know that there is a different order of radiosensitivity for different cells as follows:

If we arrange some of the many cells of the body mechanism into a diminishing order of radiosensitivity, we come to the following:

- 1) Lymphocytes
- 2) Granulocytes
- 3) Basal cells, such as occur in epithelium and the covering membranes of the gastrointestinal tract and body
- 4) Alveolar cells of the lung
- 5) Bile duct cells
- 6) Cells of the tubules of the kidneys
- 7) Endothelial cells, such as cover the peritoneum and the pleura and the lining of the blood vessels
- 8) Connective tissue cells
- 9) Muscle cells
- 10) Bone cells
- 11) Nerve cells

Even in relation to these cells certain types of radiation are perhaps more effective than others. It is known for example that there is a considerably greater effectiveness of neutron radiation as against gamma or x-ray radiation.

Even with the blood stream proper we know that there is a difference in sensitivity of the cell constituents of the blood. For example, if one exposes the cells of the blood to a given moderate exposure of radiation in the order of 300 roentgens

in a short period of time, one finds that there is an immediate drop in lymphocytes, granulocytes, and blood platelets, but that the lymphocytes recover somewhat more rapidly, the granulocytes recover and over-shoot to a greater number, and the platelets also very gradually recover. The red blood cells in themselves are quite radio-resistant. However, ultimately the patient becomes anemic as a result of ionizing radiation, not only due to a direct affect on the bone marrow, but also from a diminished life span of the red cell produced by this traumatized and damaged bone marrow.

In exposing the whole body to ionizing rays, there are three broad orders of radiosensitivity of organ systems:

- 1) The reticulo-endothelial system (of which the bone marrow and the spleen are examples) is perhaps the most sensitive, and radiation doses in the order of 300 or 400 roentgens to the whole body mechanism can significantly alter the biologic behavior of this system.
- 2) If the dose is increased to approximately 800 roentgens, one finds not only the serious affects upon the bone marrow, but there will also be deleterious affects upon the gastrointestinal tract. Here the cells within the small glandular crypts in the small intestines are suddenly inhibited from multiplying normally. As a result of this inhibition in replacement of the lining of the membrane of the small intestine, the intestine becomes denuded and hemorrhagic. Infections may thereafter result and the individual may succumb to the infection from damage to the gastrointestinal tract.
- 3) When one exceeds these doses and gets on into the dose of a thousand or several thousands of roentgens, one finds that one derives additional damage to the central nervous system. These individuals not only succumb from reticulo-endothelial or bone marrow collapse and gastrointestinal damage, but they also derive very significant central nervous system damage.

Thus in summary regarding the general affects of irradiation of the body

mechanism as a whole, the ultimate effects which can be observed are as follows:

- 1) There may be superficial injuries to the skin and covering membranes of the body;
- 2) There may be general effects on the body particularly relating to the blood forming organisms, the gastrointestinal tract, or even the central nervous system if the exposure has been great enough.
- 3) There may be other deleterious effects such as cataracts, impaired fertility, and even reduction of life span.
- 4) There may be genetic effects which may not be apparent in the individual but they may go on, and become apparent in subsequent generations.
- 5) There may be an induction of malignant tumors in the individual so exposed either because of mutations, or because of the radiochemical behavior produced by the radiation.

Some numerical data in relation to the above five categories of radiation damage are as follows:

- a) A diminution in the white cell count involving both the polymorphonuclear leukocytes and lymphocytes in man and animals have been noted with as little as .02 to .05 roentgens per day.
- b) In the radiologist martyrs of the past, there was a decidedly increased number of deaths from leukemia as against the physician population as a whole (ratio of 9:1).
- c) With doses in the order of approximately 2,000 roentgens to the eye, it is not uncommon for the eye to develop inflammation and ultimately a cataract.
- d) Experimental data on animals indicates that small daily doses in the order of perhaps 0.1 roentgen per day may produce significant reduction in the life span of these animals. However, the reduction in life span was definite with daily exposure only in excess of 0.5 roentgens per day and was not demonstrated for doses smaller than this.

In relation to diminution in life span, it should be emphasized that there are

other activities, or exposure of the individual other than radiation exposure, which may shorten life. Thus Jones has estimated that there may be an average loss of life from smoking two packages of cigarettes per day as much as 18 years. He has further estimated that there is a loss of 15 years due to being 67% overweight; and 15 years due to having highly elevated lipo-protein level.

Lastly, before leaving the realm of the general biologic effects of radiation, we must emphasize further the difference between genetic hazards, somatic hazards, local and whole body exposure. It must be remembered that all radiation damage is different depending upon whether or not the entire body is exposed or certain individual areas are exposed.

Further it must be remembered that all radiation damage must be weighed against the great lengthening in life which has occurred during the present century. Actually 19 years have been lengthened to our life span largely as the result of the advance of the newer diagnostic methods in medicine, particularly diagnostic radiology being an important contributor.

WHAT ARE THE SOURCES OF RADIATION EXPOSURE?

The ionizing radiation to which we are, or may be subject, stems from four sources:

- 1) Natural background;
- 2) Radioactive fall-out (atomic bomb testing);
- 3) Use in medicine of irradiation and radioactive isotopes;
- 4) Occupational hazards.

We consider exposure over 30 years as genetically significant.

With regard to natural background from naturally occurring radioactivity and the cosmic radiation, the figure 28 millirads per year is frequently used as a mean value near sea level. This would yield a 30 year dose of .84 rads. The value would change of course with altitude and increasing geomagnetic latitudes.

Radiation from naturally occurring radioactive isotopes occurs from external exposure or from ingestion in deposition of certain radioisotopes in the body.

External gamma radiation out of doors has been estimated to vary from $1\frac{1}{2}$ to 4.8 rads in 30 years in the United States with most of the population sustaining exposures near the former figure. These values are similar to those obtained in most of Europe but appreciably lower than the exposures experienced by some individuals. For example, in a certain area of India (the Chavara-Neendakara area of Kerala in India) and the Manavalakurichi Region of the Madaras State, doses of external gamma radiation inside dwelling may run as high as 45 rads in a 30 year period.

So far as radioactive isotopes are concerned, it is safe to assert that the internally naturally occurring isotopes are the most important. These are for the most part: Carbon-14, Potassium-40 and Radium-226. The total 30 year dose to the gonads from these would appear to approximate 0.6 to 0.7 rads. This figure will of course vary with diet and water supply.

With regard to weapons testing, assuming continuation at the present rate, the dose will be of the order of .10 rads in 30 years. Of this 20% to 40% will be derived from external sources. The principal concern is with the behaviour of Strontium-90 and Cesium-137, both of which have long half-lives. Strontium-90 is selectively incorporated into the bone and Cesium-137 could conceivably be very widespread throughout the body, including the gonads.

The most extensive use of radiation of course is the medical use. The available data suggests that the 30 year gonad dose in the United States for medical use is not less than 1.5 rads with 4.5 rads being the probable value. It is interesting that six or seven types of radiographic examinations account for some 85% of the diagnostic dose, and of these, these procedures constitute less than 10% of x-ray examinations. These are the ones of course which involve the pelvis and lower abdomen where the gonads must of necessity be in the primary beam.

Thus from the three common sources we find that the 30 year dose lies in the neighborhood of seven to eight rads with the medical use of ionizing radiation accounting for over one-half of this amount;

and with some 10% of all x-ray examinations accounting for about 85% of this total diagnostic use.

WHAT IS THE HAZARD OF IONIZING RADIATION EXPOSURE AT PRESENT?

An evaluation of the actual hazard of ionizing radiation to civilization requires a careful evaluation of the risk on the one hand, and the benefits to be gained on the other.

Studies which have actually demonstrated genetic hazard from ionizing radiation are very scanty. Thus far, only six studies have been published and there are possibly two or three others in the making. There have been questional observations in relation to differences in irradiated as against un-irradiated controls. These apply to congenital heart disease, and other diseases of the newborn amongst occupational groups, yet no differences amongst the various exposure classes in Japan were found along these lines. The increased incidence of hemorrhagic disease in the newborn is difficult to interpret, and in view of these objections it would be appropriate to take the position that no increase in congenital malformation following parental exposure has yet been demonstrated. The one finding that seems to emerge from the various studies has to do with the sex ratio. In individuals exposed we would expect a reduction in the number of females or a relative increase in the proportion of male births, if males are exposed. If mothers are exposed we would expect a reduction in the number of males, and hence a diminution in the proportion of male births. If both parents are exposed we might expect maternal and paternal effects to possibly neutralize each other, but not necessarily be equal. Here, too, the studies are inconclusive, except in the studies from Japan, which would be in favor of the genetic hypophysis that perhaps there has been an alteration in the sex ratio as the result of irradiation. However, the sex ratio varies so much in strange and inexplicable ways that it is difficult to place such a change directly on the door step of radiation exposure.

Also no reduction in life span related to doses presently utilized for diagnostic radiology, and in the fall-out phenomena have been demonstrated.

We come to the following basic question: In diagnostic radiology, what is the relationship of dose to hazard for the individual? How much dose, and therefore how much hazard, is involved in a given roentgen examination? What is the likely benefit to the individual of a given examination?

Dr. Edward Webster has recently gone into a very careful analysis of these various questions, in relation to the induction of leukemia, the cancerous condition of blood, in relation to the hazard of a short life span, and also with regard to the genetic affect. He has attempted to quantitate these various possible hazardous outcomes against the benefits to be derived from various diagnostic x-ray examinations.

He comes to the important conclusion from these considerations that there is an extremely low level of personal risk that attends all radiographic examinations. Even the highest exposure, a three film examination of the lumbar spine, would appear to carry a maximum risk of leukemia of one in 125,000 and of other cancer of one in 100,000. The risk of genetic damage is also small although it may be somewhat larger. Dr. Webster compared these various risks to some of the other risks which are daily around us. The first comparison was that of wearing a typical radium dial wrist watch. These have a mean radium content of about .25 microcuries of radium and measuring the radiation dose rate at one inch from the face of twenty watches, there is an estimated mean dose of 2.7 milliroentgens per hour. The calculated dose to the gonads per year on the assumption of twelve inches distance on a watch worn continuously is 80 milliroentgens, 20 milliroentgens, and 160 milliroentgens respectively, on the basis of three different reports. Assuming the lowest dosage, the 20 milliroentgens, as the conservative figure, the author produces a table which expresses the number of radiographic examinations of the principal kind that an individual may accept before the gonad dose referring to the genetic hazard equals that received from the average radium dial wrist watch worn for 10 years. Thus it is noted that seven pelvic examinations (if the scrotum is

protected), may be given before the hazard exceeds that of wearing the watch 10 years. Similarly, 1,200 chest and 1,600 skull examinations are equivalent to the 10 year radium dial watch exposure.

It has been estimated that the warmth of trousers worn by the male produces an elevated scrotal temperature and thereby increases the spontaneous mutation rate; this is estimated as equivalent to a radiation dose in the 30 year life span of about 40 roentgens. The author then listed the number of radiographic examinations necessary to yield such a radiation dose: Thus, the number of examinations of the pelvis when the scrotum is protected is 1,200; lumbar spine, 700; chest examinations, 250,000; skull, 300,000.

It emerges, therefore, that the hazards even at worst are very small and are mainly to posterity; that, although the physician must weigh the benefits of the roentgen examination against these possible disadvantages, the hazards are relatively minor and certainly are not of significant proportion.

It is this type of calculation which would be necessary to assay accurately the risks of atomic weapons testing to civilization. How many lives, or man years lost through potential warfare are being saved by such weapons development and testing? An additional dose of radiation of 1.3 roentgens per 30 years would be expected to lead in the first generation to approximately 650 persons with tangible genetic defects. If this rate of exposure continued, eventually 6,500 persons per generation would have genetic defects due to fall-out radiation, and there would be an additional 80,000 embryonic and neonatal deaths, still-births, and childhood deaths per generation, plus a larger but unknown number of minor intangible defects. This is the genetic price that the future generations of Americans must pay if tests and nuclear weapons continue. These calculations do not take into account the genetic hazard posed by Carbon-14 induced by thermo-nuclear testing.

It has been estimated that tests conducted through the middle of 1958 will result eventually over hundreds of generations in one million additional tangible defects and premature deaths. However

in a proper evaluation of these damaging relationships, one must attempt to achieve a concept of the benefit to future generations which might result in relation to such testing. This number is perhaps small in relation to the great benefits in the sociologic structure of future generations which may result. It is perhaps small in relation to the many millions of man years which would be lost in the wars which have been perpetrated or which have been prevented from occurring.

SUMMARY

A brief description of the physical and biological bases of ionizing radiation has been undertaken, and likewise a description and evaluation of the sources of irradiation are enumerated. Based upon these discussions, an evaluation of the radiation hazard in terms of benefits to society is summarized. Basically we cannot escape the conclusion that the benefits thus far obtained far outweigh the deleterious results observed or projected.

That there are hazards no one can deny; but has any progress ever been accomplished without hazard and loss of life?

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"Whiplash" Injuries of the Cervical Spine*

JOHN M. HUNDLEY, M.D., M.S.O.**

A Los Angeles orthopedist claims to be the guilty one who coined the phrase "Whiplash" injuries to the neck. This was in 1928 when he was too young to know better. *The counterfeit coinage of catchy phrases to describe a symptom complex with vague pathology seems to be a popular pastime in medicine.* There is "dyspepsia"—that covers everything within the abdominal cavity and "lumbago", "sacro-iliac slips", "slipped vertebrae", and "slipped discs", which now is the scape goat of the entire lower spine. These terms are nothing to compare with the "whiplash" as a pay off in medico-legal cases, and it has been said that some times the best cure for this counterfeit phrase is a substantial financial settlement.

The extreme controversy of the so-called "whiplash" injury, medically and legally is the greatest perhaps in modern medicine. It varies from those who believe nothing is wrong to those who believe the individual is forever disabled. This accident is of very practical value to lawyers as 15 per cent of all automobile accidents, as reported by the National Safety Council, are rear end collisions. The descriptive term is loved by lawyers who have perpetuated it, but the very idea of calling the mechanism of this unfortunate accidental trauma to the neck a "whiplash" is misleading. Being a breeder of Brahman and Hereford cattle I admit the term sounded good and reasonable, and for years I labored under the misapprehension that the head was popped like a whips lash and have so testified in all sincerity and honesty. The cracking sound of the whip is caused by rapid acceleration of the tip breaking the sound barrier or production of a vacuum producing a small clap of thunder. The whip is a very flexible object with a tapered end. There is no weight on the end of it and the noise produced is by a reverse wrist movement. The neck is attached at its base to the trunk of the

body, and at its distal end in contrast to the "cracker" of the whip supports the head, an object weighing about 15 pounds. In either acceleration or deceleration in case of accident, the weight of the head is thrown to the limit of its extremes and rebounds in the opposite direction, thus causing a variable degree of injury to the soft tissues and skeletal structure of the neck and perhaps the cerebrum. With a very gross year end impact there occurs shortening of the neck due to an increase in the cervical lordotic curve and dorsal kyphosis. Dependent upon the degree of this force, the relaxation of the individual and other factors the "whipping" is of lessor concern than the shortening—with a severe impact a primary torque is set up and will cause death or quadriplegia due to dislocation of C1 or C7 and the lessor forces of an impact will be distributed more equally. Immediately after any injury to the neck, mental tension arises and the muscles of the cervical region go into "spasm". Mobility is limited. This is a physiological response of all vertebrates. Have you noticed the cat, the dog, the deer, the cow, when emotionally upset? The neck is bowed, rigid in flexion and the hair bristles—watch the prize fighter on TV and see how his neck is bowed when he slams home a good punch.

The significance of this is that there is no human mechanism that responds more readily to the tensions of emotions or injury than that of the cervical spine. Next time you really get scared notice how your neck "freezes" and flexes stiff—even feels like the hair on your neck is bristling. This occurs with an accident, notification of a tragedy to some one dear; and of course the "tension" headache and neck ache is familiar to all with muscle tightness and limitation of movement of the cervical spine.

This term "whiplash" is neither scientific nor accurate, but it is so firmly established it probably will never be replaced by another term, nor can it be more applicably applied to the driver than to a passenger, especially the right front

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"WHIPLASH" INJURIES OF THE CERVICAL SPINE

seat occupant. The car may be standing still or under way at a slower speed than the striking car. A standing car struck from behind at 30 miles per hour produces the same effect as a car traveling at 30 miles per hour struck by another going 60 miles per hour.

Generally it is believed that these injuries occur with extreme hypertension, produced by the impact, or at the extreme of flexion when the head is secondarily snapped forward. This forward motion is produced by reflex muscle action or as a result of the car in which the person is sitting striking the car ahead. The same physiodynamics can occur from accidents striking from either the right or left side, and may be more severe because of less elasticity of the cervical spine in the lateral planes. Low back injuries are also possible with any of the above forces.

This is not the whole story but it is popular.

I believe that the driver of the striking car can rarely sustain a so-called "whiplash" injury, because it is inconceivable that flexion or hyperextension with *traction* would produce injury to the neck when the striking car operator is tense and readied for the impact.

Further—rarely does a driver sustain injury to his neck if he notices the oncoming car to his rear and becomes tense or if he firmly has his foot on the brake. Remember the scared cat or the alerted bull's neck—tense and ready for action.

But, let the individual not be aware of an oncoming impact from the rear, he'll slump relaxed in the seat. This sets him up for the typical "whiplash" the rate of speed under these circumstances is of little consequence—10 miles per hour may produce more damage under these circumstances than the expected collision with an impact of 40-50 miles per hour. Suffice it to say that at 30 miles per hour it takes only 0.01 of a second to cause a downward pressure of the neck of 600 pounds and a thrust force of over 3500 pounds. The variable factors include the masses of the automobiles, relative speed, interior and breakaway features of the involved vehicles and force us to make certain assumptions through evaluation of the patient and not the vehicles. The

damage to the automobile is no reflection on the damage to your patient.

Thus it seems logical that the following occur with a rear end collision:

1. The trunk or the body is forced forward (at 30 miles per hour 5". I.B.M. did all the extremely complicated mathematics including known variable features). This could be prevented by the use of safety belts.

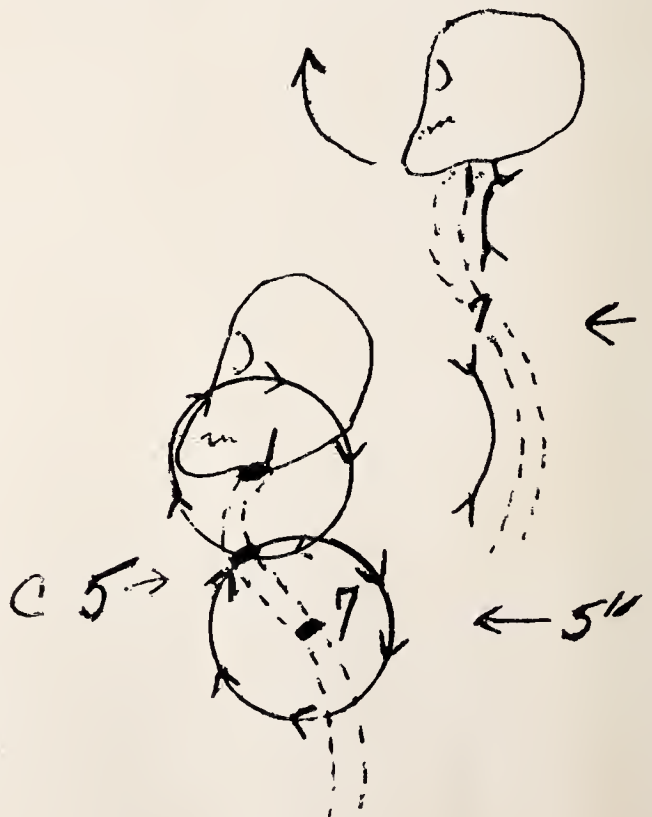
2. The curves of the dorsal and cervical spines are increased, in effect producing shortening of the structures (compression and to any severe degree resulting in fatality).

3. The above sets up a torque with two centers:

(a) The head is lofted upward and forward producing a torque with its center at C1 and

(b) with forward movement of the trunk a torque is set up at C7.

(c) The combination of these two forces produces the greatest stress at C5-C6 level, except with a more gross impact at either C1 or C7. This accounts for the greatest cause of death or quadriplegia in rear end accidents and is due to dislocation of C1 or C7 with either of the two primary torques causing the catastrophe. So if the forces do not pro-



duce immediate death or quadriplegia, then the sum of these lessor forces is received at C5-C6 area. This is the junction of the two opposing forces or torques.

This impact sets up torsional forces. The head lofts—and as it were moves negligibly neither forward nor backward at the moment of impact, but if it could, would rotate and go into orbit. Torque may produce complete dislocation and variable degrees of lessor injury.

4. The “thrust forward” or relaxed position of the head renders the patient more vulnerable to injury; the erect, ready position makes him less vulnerable.

5. Basically, the more tissue elasticity, yes—the younger the individual—the less damage—this is conversely true. The extreme is a noted case in which a man’s car was struck from behind at 90 or more miles per hour—his head was literally snapped off, and it passed through the windshield of the striking car and landed up behind the back seat of the car. At 90 miles per hour the force was 7500 feet pounds per second.

The best possible protection from “whiplash” injuries is to maintain the “expected” posture, even when relaxed. This can be aided by having and *using* safety belts very snugly fitted. The head rest is of questionable benefit, as traction flexion—traction extension rarely causes injury.

Diagnosis: This condition (“whiplash”) is so well known by laity that such objective evidence as the x-ray is tantamount in the diagnosis and thus is given first. Ordinary x-rays of the cervical spine are of little help, but routine single AP and lateral views must be made first and with gross fracture or dislocation further x-rays are contra-indicated. Provided these scout films reveal no such gross injury—all views must then be obtained. The views of the atlas ring, odontoid and the oblique views are not adequate. There must be lateral views of the cervical spine in a neutral, forced flexion and forced extension position to rule out fractures, dislocations and subluxations. Frequently due to muscle spasm the initial lateral views do not show the area from C5 to D1 as the shoulders obscure this area.

If there are no abnormal findings in the initial x-rays, objective evidence of an injury has not yet been ruled out. In proven cases with straightening of cervical lordosis in the early x-rays, repeated views in 3 to 6 weeks will show angular movement on flexion with or without subluxation. In the cases that do not reveal this after 6 or 8 weeks and still complain of occipito-temporal headaches, neck pain and shoulder soreness and many other symptoms, I would be dubious if not a “green poltice” is the treatment necessary to afford relief.

The symptoms other than the above vary greatly — diplopia, photophobia, blackouts, ear ache, ringing in one ear, stiffness of the neck, transitory numbness of a hand, upper back ache, nervousness, occipito-temporal headaches and nausea are very common and organic in most cases.

I agree with only a few of the statistics and less with the conclusions reported by a symposium from our Mississippi River neighbors somewhat to the north of us and suggest you note well the footnotes of this article. These statistics are quoted by most all defendant lawyers—so watch your step, as they are very reputable doctors with whom I take the privilege of disagreeing that the so-called “whiplash” is only a means of collecting money.

The physical findings of an objective nature are cervical muscle tightness, localized tenderness, restriction of motion, with or without crepitation, anatomical sensory changes, unequal reflexes and a positive Hoffman test.

TREATMENT:

Do not think that these people are “goofing”; you would get off on the wrong foot. They haven’t read the medical and legal literature and I think it best to first accept a patient’s complaints as a fact and then observe him closely for authenticity. With organic complaints, objective findings and substantiating x-ray findings I believe it best to apply a “cervical collar”, prescribe a muscle relaxant and a mild tranquilizer. Remember the neck and head is the most vulnerable spot for fear and tension, an animalistic instinct—don’t forget the nervous bull. Of course, a narcotic is indicated in the early

"WHIPLASH" INJURIES OF THE CERVICAL SPINE

phase of treatment. With all of this, physical therapy is tantamount—hot wet packs, followed by electro muscle massage, traction and ultra sound and later exercises. Perhaps Vitamin B-12 is of benefit.

Do not neglect to get additional x-rays as the months go by—these may indicate more severe injury than suspected—even subsequent marked subluxation, even dislocation, traumatic arthritis and clinically even progressive quadriplegia. Traumatic arthritis will develop in the majority of authentic cases in a year or two and with subsequent bony bridging of the injured vertebrae the symptoms subside—only to return 1-3-10 years later the result of abnormal wear and tear on the vertebral components above and below the area of original injury.

As much as I abhor the term "whiplash", the injury is real, disabling, pain-

ful and compensable where litigation is involved. It is not necessary to have insurance, threatened litigation and traffic charges to have pain in the neck, associated headache and other classical symptoms and findings of neck injury following an accident in which someone is struck from the rear. We still have honest patients, exemplified by the small number when struck from the rear do have these complaints and findings with no insurance or litigation involved.

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Sterile Operative Technique

JEROME J. LANDY, M.D., PH.D.*

To be able to operate without infection has long been the goal of the surgeon. Such general measures as antiseptic and aseptic techniques as well as the use and abuse of sulfonamides and antibiotics have not, to date, completely prevented the infection of "clean" surgical wounds. Infections still occur, not infrequently, in wounds where there should be no infection; for example, following such simple "clean" procedures as thyroidectomy, herniorrhaphy, mastectomy, etc. To place the current problem of surgical wound infections in perspective the history of antiseptic and aseptic techniques are briefly traced. Methods currently employed to reduce the infection rate are then discussed, and finally a method for performing abacterial or sterile surgery is described.

ANTISEPTIC SURGERY

This was named after the method of Joseph Lister (1827-1912). He was the first to deduce that suppuration was due to microorganisms. For the first time control of infection could be attempted on a rational basis. Although there were a few stalwarts in the Middle Ages, Theodoric, William of Salicet, and Henri de Mondeville being the most notable of these, who held out against the dogma of Galen, his misconception of "laudable pus" was the basis of wound care for centuries. Despite the hard fight made by these men of the Thirteenth Century the advocates of suppuration won out. Centuries later poultices and grease were still applied to fresh wounds and irritants were still placed in the recesses to promote suppuration. There were others after Theodoric and his contemporaries who attempted to

break with Galen: notably, Paracelsus (1493-1541); Ambroise Pare (1510-1590); Cesare Magati (1579-1647); and Ignaz Semmelweis (1818-1865). Their efforts were largely ignored.

Lister studied Pasteur's publications and then attempted to kill the microorganisms that might infect the operative wounds. After experimenting with various chemicals he decided to use carbolic acid, or phenol, the strongest antiseptic known at that time; he employed it on dressings and as a spray in an attempt to sterilize not only the operative field, but also the air in the operating room. He gradually perfected his method, adopting milder antiseptics such as the cyanide of mercury and zinc, and employed heat sterilization for his instruments and dressings. He covered the dressings with a "protective" such as tinfoil or oiled silk. He insisted that everything which touched the wound—dressings, instruments, or fingers—should be treated with the antiseptic. Immediately, this yielded the most gratifying results. Surprisingly, however, his colleagues were critical of his methods and relatively few of them adopted the new procedures until much later. It was the Franco-Prussian War of 1870 which was responsible for the acceptance of Lister's method of treating wounds. The Army Surgeons on both sides saw the practicality of using Lister's technique for reducing the mortality of battle wounds, and used this method with great success. Lister himself wrote an article entitled "A Method of Antiseptic Treatment Applicable to Wounded Soldiers in the Present War," which was published in the *British Medical Journal* in 1870.¹ In this he described a simple method of dressing gunshot

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wounds with carbolic lotion and carbolized oil, and such dressing materials as were likely to be on hand in the ambulances of that day. He explained also how the essential objects of treatment could be applied in the management of compound fractures.

ASEPTIC SURGERY

Following the impetus of Lister's work much progress was made in the field of antisepsis, soon followed by the concept of asepsis. Besides the sterilizing of the operating room, instruments, etc., surgeons began wearing caps and gowns, preparing the skin of the patient, and wearing rubber gloves.

It was also during the Franco-Prussian War that Ernst von Bergmann of Berlin proved the value of what he called an "aseptic dressing." Von Bergmann was actually antedated by another surgeon, Lawson Tait. Before either of them, however, Lister had visualized the possibility of relying upon heat instead of chemicals, but had never felt justified in doing so. Von Bergmann, while according to Lister full credit for this principle, proceeded to elaborate the method of rendering instruments and dressings free from microorganisms by boiling or steaming. He developed the use of operating theaters which could be rendered germfree, of metal furniture which could be thoroughly cleansed, and of steam sterilization which would be applied to towels and gowns and dressings.

Gustav Neuber of Kiel (1850-1932) had studied under Volkmann and Esmarch and had also served in the Franco-Prussian War of 1870. From 1884 until 1932 he conducted a large private hospital at Kiel, planned and built expressly for the purpose of carrying out the aseptic technique which he helped to develop. There were five operating theaters, so that "dirty" cases could be treated completely separate from "clean" ones, while the air of the theaters was sterilized by heat and by passing it through a cotton filter.²

In the collected surgical papers of Dr. William Stewart Halsted one can review some of his contributions to surgical technique, as well as to aseptic and antiseptic surgery.³ Among those aspects of surgical technique which helped decrease

wound infections was the substitution of fine silk for catgut ligatures, accurate hemostasis, and the use of interrupted sutures. Dr. Halsted is credited with the introduction of rubber gloves and gutta percha dressings, as well as using silver foil dressings.

Sir Berkeley Moynihan in his oration *The Ritual of a Surgical Operation* stressed that the surgeon must aim for simpler and better methods in surgery rather than be a mimic bound by custom and routine.⁴ Perhaps his comments on aseptic and antiseptic surgery delivered in 1920 summarized best these concepts in the pre-antibiotic era:

Our bacteriological experiment may be conducted with one of two intentions: (1) The exclusion of all organisms from the wound; (2) the destruction of all organisms reaching the wound, by a bactericide applied to the wound surfaces.

It is not accurate to speak of these two methods as those of "aseptic" and "antiseptic" surgery; for to speak strictly there is no "aseptic" surgery. In every operation some antiseptic is used on the surgeon's hands or the patient's skin. The terms are accurate enough if they are held to apply only to that part of the operation which begins with the incision of the skin. After this point the use of antiseptics in a "clean" case is rarely necessary, is often undesirable, and is almost always of greater harm than benefit. It is to insult tissues and to doubt them, when it would be better to trust their very considerable powers of self-defense.

ABACTERIAL OR STERILE SURGERY

A great deal of interest in the control and the eventual elimination of the possible sources of infection has been generated in the last few years. This has taken many forms: education and reeducating of personnel; remodeling and newer designs of hospital wards and operating rooms; newer detergents, germicides and antimicrobial drugs; newer masks and drapes; and, finally, newer concepts of operative technique.

The emphasis on the control of infection has infiltrated through all echelons of the modern hospital. Lectures, seminars, demonstrations, and movies emphasizing the control of infections have been

presented not only to staff, house staff and nurses, but also to students, orderlies, practical nurses, maintenance crews, attendants, housekeeping personnel, etc. This general concept of hospital-borne infections has infiltrated to the general public largely through newspapers and periodicals. There is always the possibility of distortion and overemphasis of certain problems. A time lag measured in years is also usually involved. For example, the problem of the antibiotic resistant staphylococcus has probably been overemphasized, while that of the carrier state of gram negative enteric bacteria has not been fully recognized.⁵

Very little change in the overall design of hospital wards, patient rooms, isolation rooms, nurseries, and operating suites have been introduced in the new hospitals. Although engineering has progressed considerably in recent decades, the practical carryover to the hospital has been small. The work of Blowers and his associates shows that simple errors in the design of air conditioning systems and ventilation ducts might well introduce potentially infectious dust into the operating room environment.⁶ More important than further work in this area is the application to the hospital of knowledge already available in engineering and design.

A great deal of interest has recently been in the area of newer drugs. Hexachlorophene has wide acceptance in the hospital routine. One of its main virtues is that it leaves a protective film on skin surfaces. Perhaps it finds its greatest application in the hand scrubbing and washing of hospital personnel, where its cumulative effect appears to be of real value. The single preparation of a patient's skin can probably be done as effectively with tincture of green soap; however, when the patient's skin is to be scrubbed on several occasions, then the cumulative effect of the hexachlorophene can theoretically be of value. Newer, perhaps more acceptable, compounds of phenolics are available. The iodophores present in new dress the very useful iodine. Whether the somewhat different physical factors of these iodines complexed with surface active agents justify the added expense has to be decided by the indi-

vidual hospital. Of course, the judicious use of antibiotics could be one of the most important factors in the overall control of infection.

Because of the emphasis of the nasal carrier as an important source of wound infections, there has been a recent interest in surgical masks. These masks are either completely impervious to bacteria or utilize some improved method of filtration. The former may simply direct the exhaled air around the mask or may rely on a special system for supplying fresh air or oxygen to the operating team and for removing their exhaled air, while the latter depends largely on newer filter materials. As an adjunct to this, many hospitals are routinely culturing personnel and either removing carriers of potentially dangerous microorganisms from duty or treating their upper respiratory tracts. The use of a sterile adhesive applied between the surgically prepared skin of the patient and a sterile plastic film is an important advance. By making the incision through the plastic virtually all skin bacteria are avoided. An additional benefit is a decrease in the amount of drapes thus needed.

All of these methods could help improve the care of surgical wounds and, if properly used, should reduce the wound infection rate to a minimum; however, their use would not eliminate the infection of "clean" surgical wounds. We believe that an overall change in basic technique is necessary for this. Levenson, Trexler, *et. al.*, described a disposable plastic isolator for operating in a sterile environment.⁷ We have used a considerably simpler unit for a number of operative procedures. Basically this consists of attaching a previously sterilized plastic jacket by means of a sterile adhesive to the skin of an animal or patient. The instruments, sutures, and a cautery are introduced into the plastic isolator before surgery. The skin is scrubbed with soap or hexachlorophene for at least 10 minutes and then painted multiple times with dilute iodine. The cautery incision is made from within the isolator, operating through inverted Neoprene gloves. The use of the cautery has three advantages: (1) only a minimal amount of skin is

STERILE OPERATIVE TECHNIQUE

exposed; (2) the plastic adheres better at the edges of the skin; (3) potential bacteria in the depth of hair follicles are destroyed or sealed off. After the incision, the operation is carried out in routine fashion. The ultimate proof of the effectiveness of this unit is the fact that we have been able to deliver large animals by hysterotomy in a germfree state.⁸ In other words, this surgical procedure was carried out without the introduction of bacteria. By this technique, one would not only be fighting infection—antisepsis — or preventing infection—asepsis—but one would be preventing the introduction of bacteria from all extraneous sources—abacterial or completely sterile surgery. There are many problems, both of mechanical design and in the general acceptance of such units, to be worked out before such a technique will be universally adopted. When this is accomplished we will then have passed consecutively through the eras of “laudable pus,” antisepsis, and asepsis, into the era of abacterial and truly sterile surgery.

SUMMARY

(1) A brief history of antiseptic and aseptic surgery has been presented.

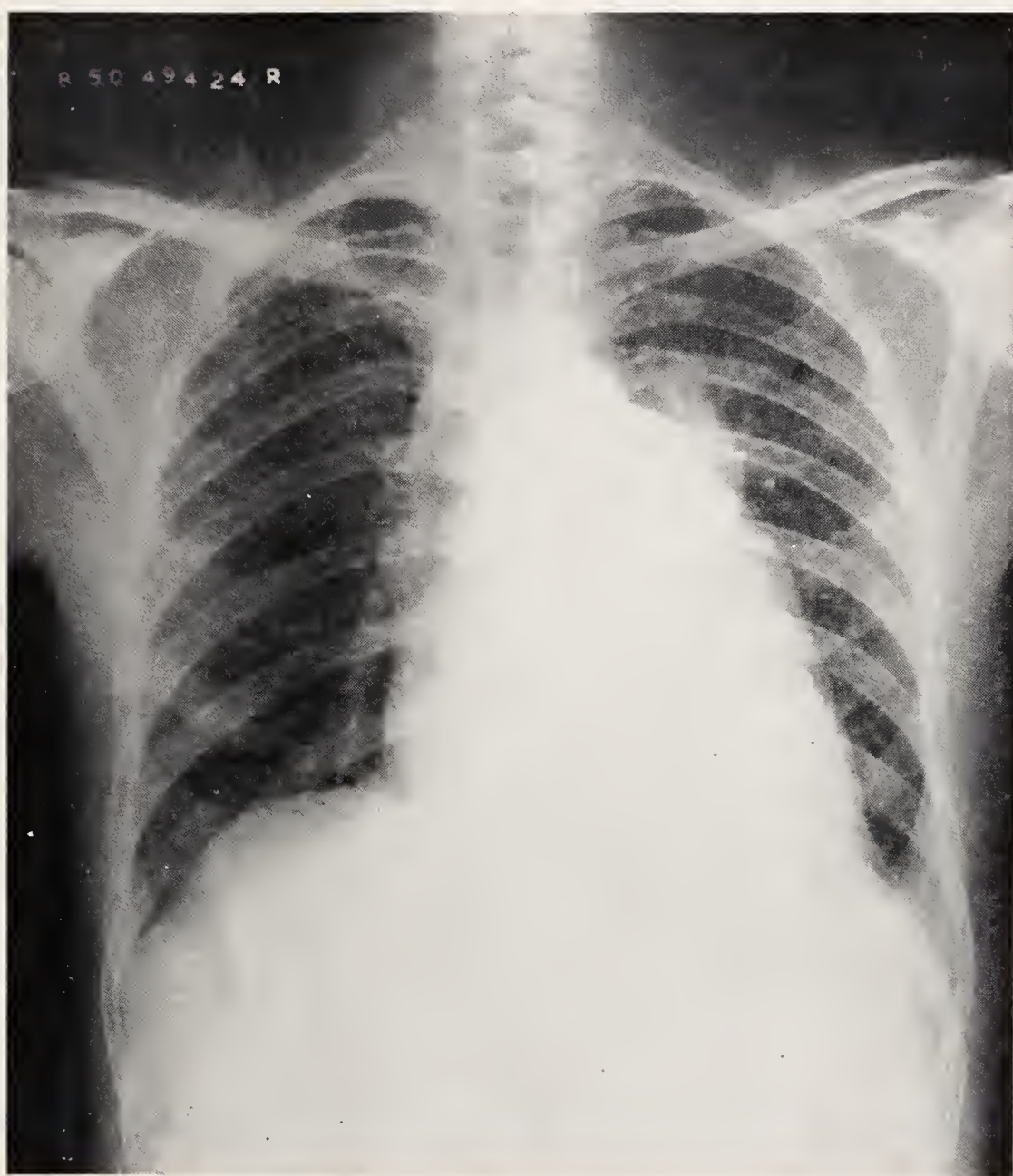
(2) Current methods of reducing surgical wound infections have been discussed.

(3) A method of theoretically eliminating the introduction of bacteria into surgical wounds has been described.

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FOR ANSWER SEE PAGE 523



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Arkansas Public Health at a Glance

Premature Infant Care in Arkansas

PATRICIA O'CONNOR, M.D.*

Prematurity continues to be a significant child health problem in Arkansas. For the years 1955-1958 prematurity has been the primary or associated cause of death for about 400 of the approximately 1,050 infant deaths (deaths under 1 year of age) occurring yearly in Arkansas. Recently the Maternal and Child Health Division of the Arkansas State Board of Health has been reviewing the problem of prematurity and the status of premature infant care in Arkansas in order to better define needs in this area, particularly with regard to the Board of Health's home care program for premature infants.

This home care program was begun in 1944-45. At that time in Arkansas, as at the present, more deaths of infants less than one year of age were attributed to prematurity than to any other cause. Also, there were inadequate facilities for care of premature infants. A survey conducted the latter part of 1944 revealed that less than half of the 115 hospitals replying to a questionnaire had a satisfactory type of incubator or heated bed. Of 62 local health departments replying to a similar questionnaire, 17 reported one or more incubators available for loan when needed. A program for improving the care of the premature infant was planned with the assistance of the Maternal and Child Welfare Committee of the Arkansas Medical Society and of a Special Advisory Committee on Prematurity. The program had a three-fold aim: (1) securing the cooperation of the physicians and hospitals in the state, (2) providing all local health departments with an approved incubator and the necessary equipment for caring for a premature in the home and (3) improving the nursing care provided for premature infants by means of a staff education program for all nurses and occasional institutes on premature care for hospital nurses.

This program has been in operation since 1945 and has been under continuous supervision by Maternal and Child Health Medical and Nursing Consultants. Recognizing that the pattern of premature infant care in the state has been changing with increased hospital facilities and improvement in general socio-economic conditions, it was felt worthwhile to reevaluate the status of premature infant care in Arkansas. This was done by: (1) Reviewing data on births and neonatal deaths obtained from the Vital Statistics Section of the Health Department, (2) surveying by questionnaire hospital facilities for care of premature infants, (3) checking public health nurses' activity reports and contacting by questionnaire those nurses using incubators for premature infant home care in 1959, (4) calling for a Special Advisory Committee on Prematurity representing the Arkansas State Medical Society, Arkansas Academy of General Practice, Arkansas Academy of Pediatrics, and the Pediatrics and Obstetrics departments of the University of Arkansas Medical Center to review this data; and, considering this and their own experiences, to help the Maternal and Child Health Division define current Arkansas needs in premature infant care. General needs were considered as well as needs in areas where the Maternal and Child Health Division might take an active part.

Information is available from the Vital Statistics Section of the State Health Department on births and neonatal deaths. These can be tabulated by color, birth weight, county of birth, and, since 1958 by hospital or location of delivery. For 1958, for example, births and neonatal deaths were tabulated by hospitals which were grouped according to number of births in each hospital in that year. Other tabulations included for each county the number of births and neonatal deaths, neonatal death rates, percentage non-

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TABLE I
Arkansas — 1958

County	Total Births	Number of White Births	Number of Non-White Births	Premature Rate per 100 Live Births	Neonatal Mortality Rate per 1,000 Live Births	Percent Births That Were Non-white
Pulaski	7615	5187	2428	10.8	22.8	31.9
Sebastian	2280	2111	169	6.3	12.7	7.4
Jefferson	1844	1023	821	7.9	16.3	44.5
Mississippi	1780	1129	651	7.3	23.0	36.6
Crittenden	1379	439	940	7.5	12.3	68.2
Miller	1270	853	417	8.7	13.4	32.8
Phillips	1254	417	837	7.9	15.9	66.7
Washington	1225	1209	16	8.1	15.5	1.3
Craighead	1164	1121	43	8.7	22.3	3.7
St. Francis	1150	329	821	9.8	12.2	71.4
Union	1126	689	437	7.0	22.2	38.8
Garland	1035	869	166	6.0	16.4	16.0

white births, percentage midwife deliveries, and percentage premature births. This was done to see if any areas seemed to be presenting a particular problem as evidenced by a high rate of prematurity or of neonatal mortality. As usual in interpreting data, consideration must be given to potential sources of error and the data must not be interpreted more rigidly than the method of collection warrants. There are several known sources of error and prejudice in these data. For example, significant numbers of births and neonatal deaths of Arkansas residents are known to occur in Memphis particularly, but also in Texarkana (Tex.), Missouri and Louisiana. These events are not included in this data. Also, it is likely that the high neonatal mortality rate (22.8 per 1000 live births) and high percentage premature births (10.8%) noted in Pulaski County in 1958 are due partially to referral to the larger hospitals of potentially complicated pregnancies and deliveries, as well as to more complete reporting from the larger hospitals (Table I). These same factors operating in the opposite direction may account for the relatively low 1958 neonatal mortality rate (12.3 per 1000 live births) and percentage premature births (7.5%) in Crittenden County which had 759 home deliveries that year. In addition, out-of-

state neonatal deaths may give a figure for neonatal mortality in Crittenden County that is considerably below the true figure. With due consideration for these factors when interpreting this data, rough but useful estimates of the problem of prematurity in Arkansas can be obtained from this material.

From 1950, the first year for which data on birth weight became available for the U. S. up to 1956, the percentage premature births among all births in this country has varied between 7.5 and 7.7%. The percentage premature white births dropped over this period from 7.2% in 1950 to 6.8% in 1956; while the percentage premature non-white births increased from 10.4% in 1950 to 12.1% in 1956.¹

In Arkansas, over the period 1950-1958, the percentage premature births (infants with birth weight less than 5½ pounds) has increased gradually from 5.8% to 7.7%. From 1956 to 1958 this percentage for white births has been 6.4%. From 1955 to 1958 the percentage for nonwhite births has increased from 7.8% to 10.7%. For 1959 the percentage premature was 7.4% total; 6.2% for white, 10.4% for non-white. More complete reporting may account for some of the increase in prematurity for the non-white.

The total number of births in Arkan-

PREMATURE INFANT CARE IN ARKANSAS

TABLE II
BIRTHS AND NEONATAL DEATHS ACCORDING TO HOSPITAL OF BIRTH
Arkansas 1958

Group		0 to 2 lb., 3 oz.	2 lb., 3 oz. to 3 lb., 5 oz.	3 lb., 6 oz. to 4 lb., 6 oz.	4 lb., 7 oz. to 5 lb., 8 oz.	5 lb., 9 oz. +	Not Reported	Total
Group I (1,000 births per year +) 7 Hospitals	Births	85	102	211	737	10,778	47	11,960
	Neonatal							
	Deaths	64	42	26	35	49	19	235
	Neonatal Death Rate per 1,000 L. B.	752.9	411.8	119.8	47.5	4.5	404.3	19.6
Group II (500 to 999 births per year) 7 Hospitals	Births	30	32	53	208	4,110	132	4,565
	Neonatal							
	Deaths	17	14	8	10	25	4	78
	N. D. Rate	565.7	437.5	150.9	48.1	6.1	30.3	17.1
Group III (100 to 499 births per year) 53 Hospitals	Births	52	87	166	678	12,612	160	13,755
	Neonatal							
	Deaths	26	41	19	22	57	15	180
	N. D. Rate	500.0	471.3	114.5	32.4	4.5	93.8	13.1
Group IV (Less than 100 births per year) 39 Hospitals	Births	6	11	22	85	1,744	25	1,893
	Neonatal							
	Deaths	5	7	3	3	10	0	28
	N. D. Rate	833.3	636.4	136.4	35.3	5.7	—	14.8
Group V Other Hospitals (uncoded)	Births	15	16	38	171	3,058	75	3,373
	Neonatal							
	Deaths	11	4	4	6	14	2	41
	N. D. Rate	733.3	250.0	105.3	35.1	4.6	26.7	12.2
Home Deliveries	Births	11	37	60	295	5,234	517	6,154
	Neonatal							
	Deaths	8	15	6	14	40	22	105
	N. D. Rate	727.3	405.4	100.0	47.5	7.6	42.6	17.1
Totals (All Deliveries)	Births	199	285	550	2,174	37,536	956	41,700
	Neonatal							
	Deaths	131	123	66	90	195	62	667
	N. D. Rate	658.3	431.6	120.0	41.4	5.2	64.9	16.0

sas has decreased slightly from about 42,000 in 1955 to about 41,000 in 1959. With 7.5-7.7% of these being births of premature infants, about 3,000-3,200 prematures yearly can be expected. In 1959 there were about 5,600 home deliveries; 404 of these newborns were prematures weighing less than 5½ pounds.

Neonatal mortality for the United States in 1958 was 19.5 neonatal (under 28 days of age) deaths/1000 live births.² This has remained relatively constant since about 1953. In 1951 the U. S. neonatal mortality rate was 20.0; in 1954,

1955, and 1957 it was 19.1.^{2,3} Prematurity (or immaturity) was the major cause of death in this period. For Arkansas, the neonatal death rate for 1956 was 16.5; for 1957 it was 15.8; for 1958 it was 16.0. Table I lists neonatal mortality for the 12 counties in Arkansas with more than 1000 births in 1958. Four counties had rates close to 23 while four had rates close to 12. In reviewing this data, various factors such as variation in completeness of reporting, referral of problem cases to large centers, and normal variation (particularly when dealing

with rates 1000 for events numbering 1,000-1,500), should be considered. Considering this, one can only speculate as to the meaning of these figures.

In 1958, Arkansas birth certificates were coded by hospital of delivery for the first time. Hospitals were grouped according to the number of births in each hospital in 1958 (similar to method used by Schackelford, et al.⁴), and births and neonatal deaths were tabulated by weight for each group of hospitals, uncoded hospitals, and for home deliveries. Table II gives those figures. Again this must be interpreted with care considering such factors as referral to large hospitals of problem cases, possible under-reporting in case of home deliveries, and expected variability in rates computed, particularly for the small numbers seen in many of the subgroups. For home deliveries it is interesting that neonatal death rates for infants weighing less than 5½ pounds are comparable to rates in hospitals for similar sized newborns. However, a neonatal death rate of 7.6 neonatal deaths/1000 live births for home delivered infants weighing more than 5½ pounds is probably significant because it is based on a large number of births (5,234), and is about 50% higher than the neonatal death rate of 5.2 for all 1958 live births weighing more than 5½ pounds. A similar pattern is noted for 1959. This may mean that better care is given in home deliveries to the premature than to the full term; it may mean that there is under-reporting of home delivered pre-

mature births and neonatal deaths. Except for this, the data in Table II does not point out any specific areas for concern. This also applies to Table III which shows the distribution of live births, neonatal deaths, and premature births by hospital groups, and home deliveries.

In April, 1960 a questionnaire, similar to the one sent out in 1944 which was referred to above, was sent out, and 92 out of 122 hospitals replied. Replies were grouped according to hospitals by number of deliveries in 1958 as in Table II. Replies were received from 7 group I hospitals (more than 1,000 births 1 year), 6 group II hospitals (500 to 999 births per year), 35 group III hospitals (100 to 499 births per year), 16 group IV hospitals (less than 100 births per year), and 25 group V hospitals (uncoded). Only 19 hospitals, and of these 9 were from group IV, and 9 from group V hospitals, indicated they did not have facilities for caring for prematures weighing less than 3½ pounds. About half of the hospitals in each group indicated that they had used public health nurses for follow-up home care of prematures. Seven of the group III, ten of the group IV, and fourteen of the group V hospitals replying indicated that they did not have oxygen analyzers; all other hospitals indicated they had these. Questions regarding availability of a blood bank, biochemistry laboratory, bilirubin determinations, and exchange transfusion equipment were apparently not well phrased since answers indicated variability in interpretation. In

TABLE III
LIVE BIRTHS, PREMATURES, NEONATAL DEATHS BY HOSPITAL OF BIRTH
Arkansas 1958

Hospitals According to Births per year	Live Births		Prematures		Neonatal Deaths	
	Number	% of total live births	Number	% of total premature births	Number	% of total neonatal deaths
Group 1—1,000 +	11,960	28.7	1,135	35.4	235	35.2
Group II—500-999	4,565	10.9	323	10.1	78	11.7
Group III—100-499	13,755	33.0	983	30.6	180	27.0
Group IV—Less than 100 births per year	1,893	4.5	124	3.9	28	4.2
Uncoded Hospitals	3,373	8.1	240	7.5	41	6.1
Home Deliveries	6,154	14.8	403	12.6	105	15.7
Total	+41,700	100.0	3,208	100.0	667	99.9
+ 9 Uncoded Neonatal Deaths						

general, however, these resources were available at all group I and II hospitals, most group III hospitals, and at many of group IV and V hospitals. All hospitals except two indicated they had equipment for giving intravenous fluids to small infants. Information of this questionnaire was requested to give a general idea of facilities in Arkansas for newborn infants, particularly prematures. The response indicates that these facilities are widely available and shows a marked change from 1944 when less than half of 115 responding hospitals had a satisfactory incubator. Essentially, all hospitals replying to the 1960 questionnaire had incubators.

The MCH Division has provided portable incubators and premature infant carrying cases to each local health unit to be loaned on request. To determine the extent and kind of use made of these incubators, public health nurses' activity reports for 1959 were checked. In 1959 the incubators were used for 24 white infants, and 47 nonwhite infants. Four counties in the eastern part of the state accounted for 40 of the 71 times the incubators were used. Questionnaires were sent out to the 26 counties where incubators had been used requesting birth weight, color, and birth date of child for whom incubator was loaned; date of loan and return; and status of the child as of April, 1960.

Responses were obtained covering 65 infants. Some counties which had loaned incubators in 1959 no longer had a public health nurse when the questionnaire was sent. Forty-six infants, 8 white and 38 nonwhite, were put in Board of Health incubators at birth. Of these one white child and 14 nonwhite children had died, all in the neonatal period except one nonwhite infant (birth weight between 3 lbs. 6 oz. and 4 lbs. 6 oz.) who died at 5 months of age. None of these 46 infants had a reported birth weight less than 2 lbs. 3 oz.; 14 had a birth weight between 2 lbs. 3 oz. and 3 lbs. 5 oz.; 23 had a birth weight between 3 lbs. 6 oz. and 4 lbs. 6 oz.; 7 had a birth weight between 4 lbs. 7 oz. and 5 lbs. 8 oz.; birth weight not reported for 2 infants. Nineteen infants, 11 white and 8 nonwhite, were put

in Board of Health incubators some days after birth. One of these infants, a nonwhite infant, found by the public health nurse sometime after birth did not survive. The other infants put in Arkansas State Board of Health incubators some days after birth had been cared for initially in hospitals or clinics. All of these infants survived.

This data and the status of premature infant care in Arkansas was discussed at a meeting held May, 1960 of an Advisory Committee on Prematurity. The Maternal and Child Health Division of the Arkansas State Board of Health asked the Arkansas State Medical Society, Arkansas Academy of Pediatrics, Arkansas Academy of General Practice and the University of Arkansas Medical Center's Pediatrics and Obstetrics departments, to be represented on this committee. Members of the committee reviewed statistical data, and reported on their own experience and impressions. It was agreed that hospital care for all premature infants, at least for a period of stabilization, was indicated. It was recognized that economic factors are involved and that hospitalization of prematures is often prolonged and expensive.

The Committee recommended investigation into the possibility of further financial assistance for hospital care for premature infants from indigent families, and consideration of a study to determine the value of short term hospital care of premature infants combined with early home care and public health nurse follow-up. This latter plan is being utilized in one county in the state in particular.

The Committee also made recommendations for activities in which the Maternal and Child Health Division could actively assist in the promotion of premature infant care. It was recommended that a nursing consultant on premature infant care be employed to provide on-the-job consultation and to develop short courses in premature infant care. Courses should be designed for nurses and for aides and be available on a continuing basis. Hospitalization of all premature infants, at least for a period of stabilization should be encouraged. Close coordination of hos-

pital and home care of premature infants after discharge should be promoted.

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The Lesson of Hitler's Third Reich

ALFRED KAHN, JR., M.D.

In the heart of West Berlin, Kurfurstendamm is a busy thoroughfare with few remembrances of the destruction that visited it during World War II. It is dominated by one grim memorial, the shattered tower of the Kaiser Wilhelm Chapel, jokingly referred to by Berliners as the "hollow tooth". Nearby, in East Berlin buildings on Unter den Linden, once one of the handsomest avenues in Europe, lie in ruins with untended yards; traffic is pedestrian and sparse — and faces are gray and unsmiling. This schizoid personality in a formerly great city accurately reflects many differences between a democratic government and a ruthless dictatorship.

Here, in this same Berlin, now relearning democracy in its Western portion, was the capital of one of the grimmest dictatorships in all history. The contrast carries even farther; in nearby democratic countries while medical research was encouraging the discovery of penicillin by Florey and other worthwhile drugs for humanity, in Nazi Germany medical scientists criminally defied moral law and medical ethics to stoop to criminal activity. This is summarized in William L. Shirer's "The Rise and Fall of the Third Reich" (Simon and Shuster, New York, 1960).

Shirer documents some of the "experiments" conducted by Nazi doctors; perhaps less than 200 doctors were active participants, but the "experiments" were known to thousands of German physicians, and not a single public protest was recorded. The victims included Russians, Jews, Poles, and even Germans.

The experiments were varied and almost too gruesome to believe. But, Shirer's sources of information include research into the testimony at the Nuremberg trials, and his bibliographical references occupy 8 pages; however, only a fraction of these bear on the medical aspects of

the Nazi regime. Prof. A. Hirt of The Anatomical Institute of The University of Strasbourg wanted measurements of skulls of humans before death and then compared to measurements after death; the heads were supplied to him from the extermination camps; among the witnesses who verified this was Capt. Josef Kramer, who described how he poisoned the prisoners with cyanide gas. A Dr. Sigmund Rascher performed aviation research for the Nazis. One group of experiments pertained to high altitude exposure. In this experiment 200 prisoners were used, of which 80 were killed outright by subjecting them to low pressures in a decompression chamber; the description of their agonizing deaths was graphically told by Anton Pacholegg, an Austrian prison inmate. This same Dr. Rascher also conducted "freezing experiments" to determine how long a human could stand cold before succumbing and how to best re-warm a person exposed to extreme cold; the case is cited of 2 Russian officers exposed to extreme cold in a vat of ice water for five hours before expiring; another case cited by Shirer was that of placing a naked prisoner on a stretcher in the prison yard in mid-winter and then slowly permitted to freeze by hourly throwing cold water on him—temperatures and other physiological information was meticulously recorded. Re-warming experiments included putting partially frozen prisoners in bed with women prisoners.

Physicians everywhere should ponder the lessons implied in Shirer's documentation of the Third Reich. In the first place, in a domestic political arena, there is no such thing as being neutral. If one does not oppose a controversial subject, his inactivity will be assumed by many to be consent. It becomes increasingly difficult to stop a snowballing political attitude or philosophy; the longer one

FEATURES

waits the more difficult the job, and unfortunately there is no road back in many instances—without complete self-destruction of the nation. The various “isms” are seldom the result of a single bold action, but rather develop slowly and insidiously, one step at a time; consent is implied by unwise neutrality. Medically, the physician must remember that his professional aims as expressed in the Hippocratic oath are likely to be the first

twisted at the command of a dictator, or perverted by the siren call of socialism. Private practice of medicine is not compatible with a dictatorship, nor will it flourish in a socialist state which by definition is opposed to individual enterprise in business or profession. Physicians must take a stand on controversial political subjects or they, in various ways and to varying degrees, fail their obligation to humanity.

MEDICINE IN THE NEWS

Use Caution in Disposing Of Sample Drugs

The State Board of Health points out that extreme caution should be used by physicians and individuals in disposing of sample drugs or when cleaning out the family medicine cabinet. When such drugs are thrown into the garbage can to be picked up by the City Sanitation Department, there is too much danger that children will pick them out of the refuse and either swallow the drugs themselves or induce other children to do so.

From Washington Office American Medical Association

Washington, D.C. — The medical profession, the U. S. Public Health Service and the National Foundation are working together in an all-out drive to get as many persons as possible to take Salk vaccine shots before the summer polio season starts.

The Sabin live polio vaccine will not be available in quantity this year.

The Salk vaccine campaign drive is directed particularly at children and younger adults in the lower economic groups.

Dr. Julian P. Price, Florence, S. C., chairman of the American Medical Association's Board of Trustees, pointed out that many children and younger adults in the lower income groups have not been inoculated against polio.

Dr. Luther L. Terry, Surgeon General of the Public Health Service, emphasized the need for immunizing infants. He also said that the PHS will encourage behavioral studies to determine reasons why some people refuse to take polio shots. It is hoped that then methods may be devised to overcome such refusal.

Dr. Terry called particular attention to the findings of the PHS's Advisory Committee on Poliomyelitis Control that the recommended dosage schedules may be modified to permit the administration of three shots of Salk vaccine before sum-

mer to persons who have not had any vaccine before.

The Advisory Committee urged that "immediate steps . . . be taken by all interested groups to intensify drives for vaccination with the formalin-inactivated (Salk) vaccine." The Committee also endorsed the plan to direct the campaign particularly at the lower socioeconomic and younger age groups.

The Committee recommended that the first available supplies of the Sabin live, oral vaccine be utilized in the following priority order: —

1. Epidemic control, investigations and community studies.
2. Immunization of infants and pre-school children.
3. Selected area immunization of those segments of the population that are least well immunized.

Congress now has before it legislation to carry out all of President Kennedy's broad health program, but it is doubtful that the lawmakers will act upon some of it this year.

Kennedy health legislation sent to Congress recently included bills on medical education and federal grants for nursing homes and other community facilities.

The Chief Executive also recommended an expanded program to combat water pollution. He requested Congress to authorize federal grants of \$125 million a year for 10 years to help states forming interstate water pollution control agencies. He also recommended increased federal aid to communities building sewage treatment plants.

The President proposed creation of a special unit in the Public Health Service to handle both air and water pollution matters.

In accompanying letters to the presiding officers of the House and the Senate, Kennedy said he regarded his medical education proposals as the keystone of the overall health program because "we are not presently training enough (physicians) to keep up with our growing population."

The other bill would "make possible a substantial addition to the number of nursing home facilities to care for long-term patients, and . . . help relieve the

shortages of home health care programs," Kennedy said.

The medical education measure would authorize federal grants for scholarships for medical and dental students. Each medical and dental school would be eligible for a total of scholarship grants equal to \$1500 times one-fourth of the enrollment after the program had been in effect for four years. The maximum individual scholarship would be \$2,000 a year. Participating schools also would be eligible for federal grants of \$1,000 per scholarship to help pay a school's operating expenses.

The community health facilities bill would increase the annual authorization for federal grants for construction of nonprofit nursing homes from \$10 million to \$20 million and raise the minimum state allotment from \$50,000 to \$100,000 per year. It also would broaden the PHS Surgeon General's authority to conduct research, experiments and demonstrations on development and utilization of hospital services, facilities and resources to include other medical facilities.

Federal grants also would be authorized to help finance studies, experiments and demonstrations by states and other non-federal agencies for development of new or improved methods of providing health services outside hospitals, particularly for chronically ill or aged persons.

The A.M.A. found "much to applaud" in Kennedy's overall health program, but stood fast in opposing the proposal to provide elderly persons with health care through the social security system.

The Third Annual meeting of the South Central Association of Blood Banks held at the Jung Hotel in New Orleans, Louisiana March 3-4 was well attended by blood bankers throughout the six-state area. An excellent scientific program plus a technical workshop designed for both physicians and medical technologists was presented. The 1962 meeting will be held in Fort Worth, Texas.

IT ISN'T INSURANCE*

Social Security Taxes Are Not Insurance Premiums

But it is not insurance. It carries no "rights" to anything except what Congress, from time to time, may grant as a gift. The contributions to it, deducted from pay, are not "insurance premiums" but a tax, pure and simple.

Who says so? The Secretary of Health, Education and Welfare says so. The Solicitor General of the United States says so. Finally, the Supreme Court says so.

In a little noted decision last June 20 the Supreme Court ruled finally on a question which has irked many real insurance men for a quarter-century.

The case was that of Nestor v. Fleming. Ephram Nestor, a Bulgaria-born industrial worker in Los Angeles, was deported in July 1956 to his homeland, as a Communist. He had been a Social Security contributor since 1939 and was drawing old-age benefits when deported.

He drew two monthly checks after his deportation and wanted his benefits restored on the grounds that he "had paid for them."

His theory was that on which most discussion of Social Security is based: that he had been paying money into Social Security which would be held for him and, in his old age, given back with interest.

He was wrong, and the brief of the U. S. Solicitor-General, on appeal to the Supreme Court, leaves no excuse for any Senator, Congressman, or bureaucrat ever again to speak so loosely about their product.

"The old-age monthly benefits program which Title II of the Social Security Act establishes is not a federally-administered 'insurance' program," Secretary Fleming declared in this brief.

No Annuity

"The contribution exacted under the Social Security plan," he went on, "is a true tax. It is not comparable to a premium promising the payment of an annuity

*Taken from an article in the Philadelphia Evening Bulletin of September 19, 1960, by Morley Cassidy. Mr. Cassidy is Assistant Editor.

commencing at a designated age."

The Solicitor-General presented this version to the Supreme Court to explain why Nestor had no "right" to any benefits, and went on to say: "The 'Trust Fund' from which OASI benefits are paid is maintained by annual appropriations made by Congress . . . Unlike private insurance companies, which essentially require reserves equal to the present value of all benefits, the Social Security program needs no such reserves, since it is assured of continuing participation through the exaction of taxes . . . The beneficiary or prospective beneficiary acquires no interest in the fund itself."

* * *

E. M. Bluestone, M. D., who pioneered the home care program at Montefiore Hospital, New York, has been chosen to receive the American Hospital Association's Distinguished Service Award for 1961.

Dr. Bluestone was director of Montefiore Hospital for 22 years before his retirement in 1951. He is now "consultant for life" to the hospital.

Called "The father of home care," Dr. Bluestone has been a leader in the development of better care for persons with prolonged or chronic illness.

The Distinguished Service Award is the highest honor conferred by the American Hospital Association and is given for outstanding leadership in hospital administration. Dr. Bluestone is the 26th recipient. The award will be presented during the American Hospital Association's 63rd annual meeting Sept. 25-28 in Atlantic City, N. J.

Army Establishes New Medical Research Unit in Thailand

The Army Medical Service has collaborated in establishing a new medical research unit, the SEATO Medical Research Laboratory, in Bangkok, Thailand, the Army Surgeon General's Office announced today.

The laboratory has been set up as the U. S. Component of the SEATO Medical Research Project to conduct a continuing research program on infectious diseases in the area including cholera, typhoid, hookworm disease, dengue fever, malaria,

filariasis, scrub typhus.

Organizationally established as a special activity of the Walter Reed Army Institute of Research, Washington, D. C., the U. S. Component will be directed by Lt. Col. Oscar Felsenfeld, Medical Corps. His staff will eventually consist of about 15 scientific and medical personnel. From the Office of The Surgeon General Technical Liaison Division, Washington, D. C.

From Association of American Medical Colleges

The AAMC and International Opportunities in Medical Education

The pre-eminence of the American medical educational system carries with it a responsibility for sharing our techniques with other countries seeking our help. In order to meet these responsibilities and to provide more vigorous leadership in dealing with the issues involved, the Association of American Medical Colleges is establishing a Division of International Medical Education with funds provided by the Rockefeller Foundation.

In essence, the Division will endeavor to promote interest in international cooperation in medical education; develop a coordinated plan to assist various agencies in the recruitment of American faculty for service abroad; assist overseas faculty to locate, on a pro tem basis, in this country; contribute what it can to improve educational opportunities for foreign graduates seeking advanced clinical and research training in the United States; and conduct forums for the exchange and discussion of information and ideas.

Many foreign countries, developing new medical schools, are eager to recruit American medical educators and administrators for service abroad on a one or two-year basis. Also, the increasing demand from private and governmental agencies for trained medical personnel with requisite language skills to accept teaching and administrative positions abroad is posing a problem because no central roster exists of persons interested and qualified for these positions.

The Rockefeller Foundation grant of \$250,000 over a five-year period, will aid in the creation of just such a program.

It should be emphasized here that the staff chosen to direct the Division will be cognizant of the particular needs of the individual countries seeking our help—and application to fit these needs must be made accordingly.

Conference on Medical Education for Foreign Scholars

The China Medical Board of New York has supported conferences on medical education for foreign scholars in the medical sciences since 1957. Held annually, the conferences have drawn approximately 50 foreign physicians, most of whom had completed a year or more of study in the United States and were about to return to their home schools. These conferences, co-sponsored by the AAMC, the Committee on International Exchange of Persons of the Conference Board of Associated Research Councils, and a host medical school have been held at the University of Wisconsin, State University of Iowa, and the University of Colorado. The conference for 1961 will be in the Spring at Rochester University School of Medicine and Dentistry. The setting for the 1962 conference will be on the University of Chicago campus.

Latin American Medical Education

In Mexico City last year, AAMC Executive Director Dr. Ward Darley helped set the wheels in motion for a closer relationship with Latin American medical educators. Attending the Pan American Medical Association meeting where he served as chairman of the Section on Medical Education, Dr. Darley returned with a report that the deans of South American medical schools had suggested the formation of a Pan American Federation of Associations of Medical Colleges. The AAMC invited the deans of Central and South American medical schools to its 71st Annual Meeting held October 31, 1960 in Florida. Thirty-one Latin American deans, or their representatives, attended the AAMC meeting. The Latin American deans considered the idea of the formation of a Federation of Associations of Medical Colleges and adopted a reso-

lution favoring the establishing of such an association. Further considerations will be given at the 1961 annual meeting.

Subsequent to this meeting, Drs. John A. D. Cooper of Northwestern and Maxwell Lapham of Tulane travelled to Montevideo, Uruguay November 28, 1960 where they attended the Second Conference of Latin American Faculties of Medicine as representatives of the AAMC.

Many of the Latin American medical educators expressed interest in participating in the next AAMC Annual Meeting to be held in Montreal, November 13-15, 1961. Officers of the AAMC, and members of the Executive Council concur that a closer liaison can and should be established between the medical educators of Latin America and medical educators of the United States.

It is noteworthy that the University of Miami, on its own initiative, has rallied to the aid of the Cuban physicians who have fled their country. The School of Medicine organized a special three month postgraduate refresher course for the Cuban physicians and the response was overwhelming as nearly 200 signed up for the first course which began January 9. Over \$90,000 has been contributed by professional organizations, pharmaceutical and business firms to carry the financial load.

Youth as a Force of Peace

When President John F. Kennedy, in his campaign statements last November, proposed a "peace corps" of "talented young men" to work in the world's underdeveloped areas for three years as an alternative to the draft, he didn't know the AAMC has a small "good will" or on-going peace corps of its own in the Smith Kline and French Foreign Fellowship program. This program may prove to be an important cog in the development of President Kennedy's peace corps.

This year 30 junior and senior medical students from across the nation have been named winners of Smith Kline and French Foreign Fellowships by the AAMC in its second year of presentation.

The 1961 winners will travel to such places as Pakistan, Korea, Japan, Burma, Haiti, New Hebrides, India, Thailand, Cambodia, Ghana, the Congo, Tangan-

yika, and other African countries where they will work in mission hospitals and outpost medical facilities.

Chosen by prominent medical educators, the fellows must spend at least 10 to 12 weeks at their overseas locations. The amount of each award is determined according to individual expense and need.

From Association of American Medical Colleges:

Hospitals, Internship Quotas, and the National Internship Matching Program: Some Selected Data

Each year medical educators, senior medical students and hospital administrators await the outcome of the National Internship Matching Program (NIMP) with considerable interest. The purpose of this datagram is to provide some selected data on two general factors which potentially can have influence on the success of a given hospital in meeting its internship quota through NIMP. These two factors are: (1) the type of hospital (i.e., major teaching hospital, minor

teaching hospital or non-medical-school-affiliated hospital, (2) the amount of stipend paid per month by the hospital to the intern.

Before proceeding to the presentation of the data, a few words explaining the mechanism of NIMP may assist the reader in interpreting the data. "Basically, NIMP acts as a clearing agency. Each participating student submits a confidential list or NIMP ranking, in the order of his preference, the hospitals where he has applied for internship. He applies for any internship which interests him. Each participating hospital also submits a confidential list ranking, in order of its preferences, the students which have applied to it. NIMP then matches the students with the internship he rates the highest, insofar as the hospital's relative evaluation of the student applicant makes this possible" (1).

A comparison of the major and minor teaching hospitals affiliated with medical schools and non-medical-school-affiliated hospitals in terms of their success in filling their internship positions in 1953,

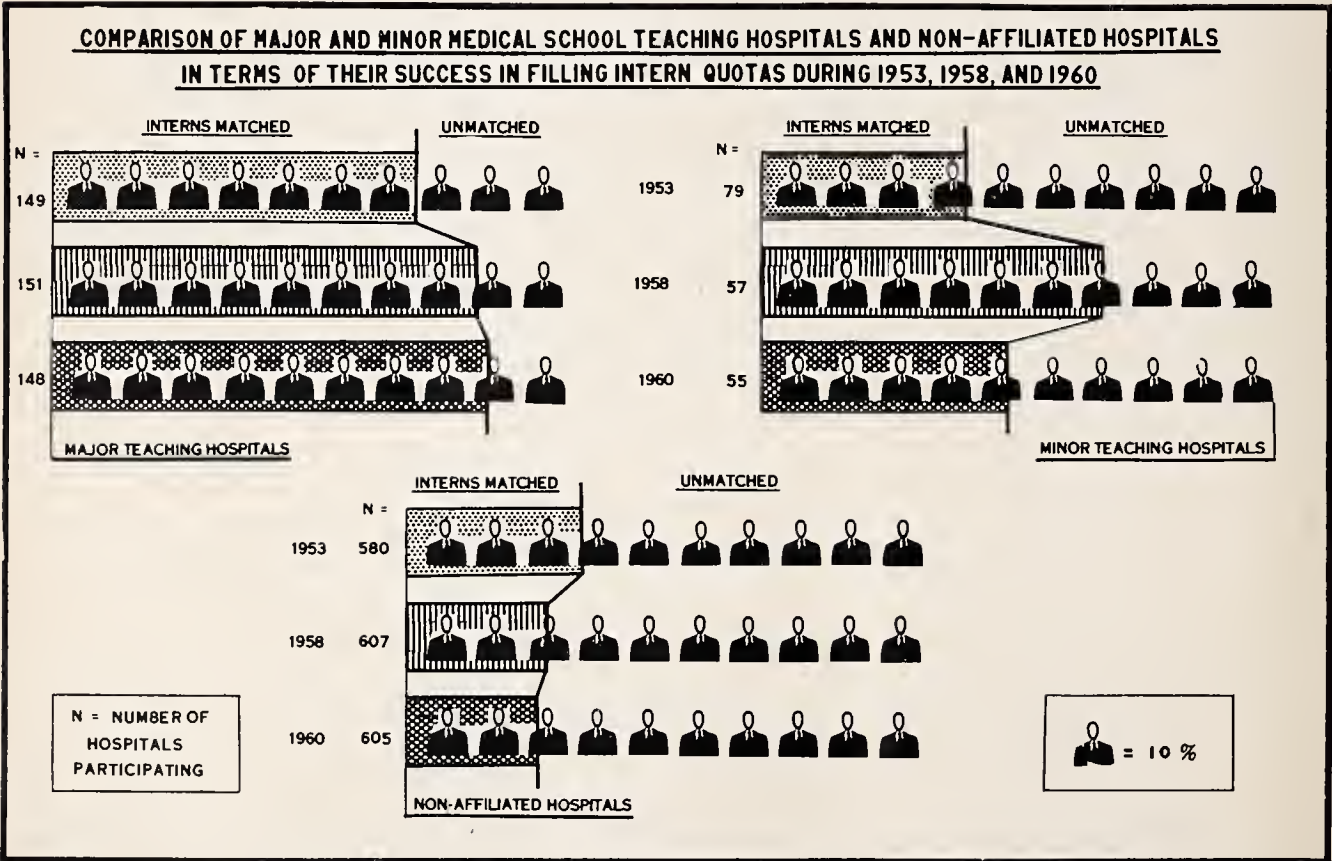


Figure 1

(1) Darley, W., The Seventh National Internship Matching Program, J. M. Educ., 34: 38-46, 1959.

1958 and 1960 is presented in Figure I.

Figure I indicates that the major teaching hospitals with an annual average of 78 per cent of their positions being filled via NIMP are the most successful of the three types of hospitals in meeting their requirements for interns. Further, the proportion of filled positions in these types of hospitals has tended to increase over the years from 70 per cent in 1953 to 83 per cent in 1960.

The minor teaching hospitals have met with only moderate success in filling their internship positions in that they filled an average of 50 per cent of their positions annually. This type of hospital also showed the greatest variation from year to year in proportion of positions filled, i.e., 38% in 1953; 65% in 1958 and 47% in 1960.

The non-medical-school-affiliated hospital meets with the least success of the three types of hospitals in filling its internship positions. This type of hospital shows an annual average of 26 per cent of positions filled. In contrast to the trend indicated in the major teaching hospital of increasing success over the years in filling

positions, the non-affiliated hospital indicates a decline in proportion of positions filled from 31 per cent in 1953 to 22 per cent in 1960.

A second basis for comparison of hospitals as regards their internship programs is the amount of stipend paid to the interns. Comparative data on the success in filling internship positions experienced by hospitals paying various amounts of stipends to interns are presented in Figure II. The years 1954, 1956, 1958 and 1960 are used as reference points.

One might expect from superficial analysis of the problem of filling internship positions in hospitals that the higher the stipend the hospital paid to its interns, the greater success it would meet in filling its internship quota. The data in Figure II indicate that this is not the case. First, Figure II indicates that the hospitals paying the smallest amount of stipend (\$50 per month or less) with an annual average of approximately 80 per cent of positions filled are the most successful of the four groups in filling their internship positions. Moreover, these

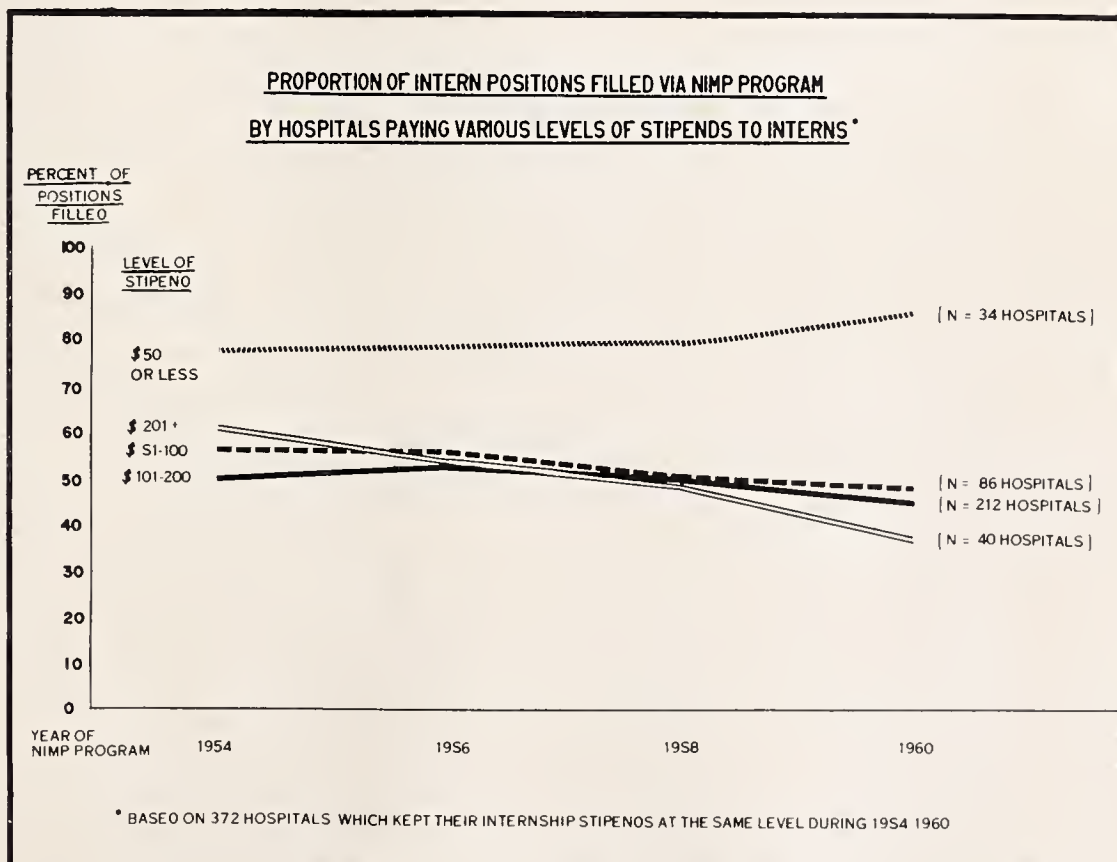


Figure 2

hospitals show a slight trend toward increasing success over the years from 79 per cent in 1953 to 86 per cent in 1960. Among the hospitals in this group 25 out of 34, or 74 per cent are major teaching hospitals.

Each of the other groups or hospitals (i.e., those paying stipends of \$51-100 per month, \$101-200 per month or \$201 or more per month) show an average of roughly 50 per cent success in filling internship quotas during the period 1954-1960. The hospitals paying stipends amounting to \$201 or more per month show a general decline in success in filling quotas from an average of 61 per cent of quotas filled in 1954 to 38 per cent of quotas filled in 1960. Among the hospitals in this latter group, 37 out of 40, or 93 per cent, or non-medical-school-affiliated hospitals.

ANNOUNCEMENTS

Arkansas Breakfast to open AMA Convention

The annual Arkansas Medical Society breakfast will be held in the Gold Ballroom of the Statler-Hilton Hotel in New York City Monday morning, June 26, 1961. This breakfast is given in honor of the officers and the members of the House of Delegates of the American Medical Association and the executive secretaries of the state medical societies. Mr. George Stinson has been invited to be the featured speaker. All Arkansas physicians in attendance are invited to attend this event.

The Annual Meeting of the National Tuberculosis Association and its medical section, the American Thoracic Society, and the National Conference of Tuberculosis Workers will meet in Cincinnati, Ohio, May 21-25, 1961.

The Tenth Annual Symposium for General Practitioners on Tuberculosis and other Pulmonary Diseases will be held in

Saranac Lake, New York, July 10-14, 1961.

The Trudeau School of Tuberculosis and Other Pulmonary Diseases will hold its 46th Session in Saranac Lake, N. Y. from June 5 to 23, 1961. Enrollment is limited; a few scholarships are available for those who qualify. Inquiries should be addressed to the Secretary, Trudeau School of Tuberculosis and Other Pulmonary Diseases, Box 670, Saranac Lake, N. Y.

The 27th Annual meeting of the American College of Chest Physicians will be held at the Commodore Hotel, New York City, Thursday, June 22 through Monday, June 26, 1961. Scientific sessions will open Saturday, June 24 and will continue through Monday, June 26.

The XVth General Assembly of the World Medical Association will be held in Rio de Janeiro, Brazil September 15-20, 1961. A special chartered plane leaving PARIS on September 9 has tentatively been scheduled to provide first class accommodations at economy prices for the doctors and their families who will attend this Assembly. A special program of general sightseeing with experienced bilingual guides will be available from September 11 to 14 and following the adjournment of the General Assembly the tour will visit BRASILIA on September 21, SAO PAULO September 22nd, and depart for Paris on September 24, arriving on September 25. The approximate cost for each participant will be \$966.00, from and to Paris. To obtain additional information address inquiry to The World Medical Association, 10 Columbus Circle, New York 19, New York.

The American Medical Association will hold its 110th Annual Meeting in New York City next June 25-30. More than 25,000 doctors are expected to attend.

Obituary

PERSONAL AND NEWS ITEMS

Dr. Preston L. Evans, aged 50, died at his home in Marshall on February 14 of acute Coronary Occlusion. He was a graduate of the St. Louis University School of Medicine, and had practiced in Marshall for about twenty years. He had served as Searcy County Health Officer and as medical examiner for the Selective Service Board of that county. He was a member of the American Medical Association and of the Arkansas Medical Society.

Dr. Evans is survived by his wife, Gladys Evans, two sons, Bob and James Evans and a daughter, Judith Evans, his mother and two brothers. Funeral services were held in Marshall and burial was at Mt. Hope cemetery, St. Louis.

Dr. O. V. Smith of Trumann died Sunday, February 19, 1961 at the age of 78 years. He was a member of the Arkansas Medical Society, the Trumann Lions Club and at one time played in the Memphis Symphony Orchestra. He was a member of the Bay First Baptist Church, having lived at Bay before moving to Trumann. He is survived by a son, two daughters and one step-daughter.

Dr. Jere Long of Brinkley has opened an office in Cotton Plant.

Dr. Kerrison Juniper, assistant professor of Medicine at the University of Arkansas Medical School, was the speaker at the regular monthly meeting in February of the Southeast Arkansas Medical group.

Dr. Ralph Weddington has been appointed medical director of Washington County, which had been without a director for several months. A new building has been completed on the grounds of the County Hospital for the health department, and adequate facilities are now available to serve the people.

Open house for the recently completed clinic occupied by Dr. Daniel Tonymon and Dr. James Wise in Marvel was held in February.

Dr. H. K. Baldridge, owner and operator of the Heber Springs hospital, has sold that institution to a trio of fellow Heber Springs physicians and surgeons. The new owners are Doctors Gerald Pearce, Nathan L. Poff and William Wells.

Dr. J. H. Poff has recently moved from Albany, Missouri to Trumann and opened an office for the practice of medicine.

Dr. Lon E. Reed, Hot Springs, was installed as president of the Mid-South Postgraduate Medical Assembly at its February meeting in Memphis, Tennessee. Dr. Gilbert J. Levy, Memphis pediatrician, is the new president-elect, and Dr. John Price of Monticello was elected vice president.

Dr. John Grayden Cullins has been appointed as psychiatrist at the Benton Unit of the Arkansas State Hospital. Before joining the staff at the Benton Unit, Dr. Cullins was manager of the U. S. Veter-

ANSWER TO WHAT'S YOUR DIAGNOSIS?

36 year old Mexican male. History of non-productive cough, 8 weeks. Severe left upper chest pain.

ANSWER — Miliary tuberculosis. Sputum positive for acid-fast bacilli.

X-RAY FEATURES — There is very widespread and severe miliary nodulation throughout both lung fields with blunting of both costophrenic angles probably due to small pleural effusions. The cardiac abnormality seen on the films was not further studied at this hospital.

ans Administration Hospital in Wadsworth, Kansas. He is a fellow of the American Psychiatric Association, member of the American Medical Association and diplomat of the American Board of Psychiatry and Neurology.

The effort to preserve the natural beauties of Lost Valley, a scenic area located in Newton County's famed Buffalo River Valley, is now being directed by **Dr. Neil Compton**, a Bentonville physician. A drive is being made to create a state park out of this area of the state.

Dr. W. D. Robertson of Warren has joined a medical clinic staff at Poplar Bluff, Missouri. Dr. Robertson had been with the Crow Clinic in Warren the past two years. He was in the Air Force before entering practice in Warren.

Dr. A. B. Tate, Russellville retired physician, recently celebrated his 80th birthday at his home.

Dr. H. Fay H. Jones attended the annual meeting of the Southeastern Surgical Congress in Miami Beach, Florida March 6-9. Prior to this meeting Dr. and Mrs. Jones vacationed for two weeks on the Florida Keys.

Dr. R. B. Robins of Camden was the speaker for the Hot Springs Rotary Club on March 1st. He spoke on the new, 10-point, constructive program for the extension of improved health and medical care to all the people sponsored by the American Medical Association.

DR. SHERMAN RECEIVES AWARD

Dr. Jerome K. Sherman, faculty member at the University of Arkansas Medical Center, has been named as a recipient of the Lederle Medical Faculty Award for three years beginning July 1, 1961.

The award, based on recommendations of a national seven-member committee, is considered a high honor in academic medicine. The awards are financed by the Lederle Laboratories Division of the American Cyanamid Company.

The purpose of the Lederle program is to increase the effectiveness of teaching

and research in the medical sciences. The award recognizes and encourages certain members of medical school faculties to continue their careers in academic medicine. Some salary aid is extended, along with other financial assistance, to foster research programs, teaching and scientific exchange.

Dr. Thomas Moore Fletcher, 33, recently appointed neurosurgeon at the University Medical Center, returns to the school from which he graduated with honors in 1953.

Until January 1, Dr. Fletcher was with the Neurological Institute of New York, Columbia Presbyterian Medical Center, in New York. Now he holds the title of Assistant Professor of Surgery, Division of Neurosurgery, at the Medical Center in Little Rock. He also is on the staff of the Veterans Administration Hospital here.

Information has been received that **Dr. James M. Kolb** of Clarksville, has been re-appointed to the Committee on Medical Practices in the American Medical Association.

Proceedings of Societies

The Lee County Medical Society had present for its program March 16th, 1961, at the Lee Memorial Hospital Doctor Harold B. Boyd of Campbell's Clinic in Memphis, Tennessee. His subject was "Common Injuries of the Ankle." Physicians from Elaine and Helena were guests at the meeting.

The Ouachita County Medical Society met in regular monthly dinner session Tuesday night, March 7th, at the Camden Hotel in Camden.

Program:

"Postoperative Complications"

Drs. Henry Hollenberg and Hal Black
Little Rock

Dr. James M. Kolb of Clarksville has been elected president of the Johnson County Medical Society. Other officers

elected include Dr. R. H. Manley, vice president, and Dr. W. R. Scarborough, re-elected secretary.

New Members . . .

A new member of the Chicot County Medical Society is **Dr. Thomas C. Wilson**. He is a native of Little Rock and received his preliminary education at the University of Arkansas. His M.D. degree was obtained from the University of Arkansas Medical School in 1958. Dr. Wilson's office is at 105 South Freeman in Dermott.

Dr. W. M. Wells is a new member of the Cleburne County Medical Society. A native of Little Rock, he received his preliminary education at Hendrix College in Conway from which he received a B.A. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1959. He served his internship at St. Vincent's Infirmary. Dr. Wells is a General Practitioner with his office at 105 North 6th in Heber Springs.

Dr. Nancy Kate Clary has been accepted for membership in the Arkansas County Medical Society. A native of Little Rock, she received her preliminary education at Hendrix College in Conway from which she received a B.A. degree. She was graduated from the University of Arkansas School of Medicine in 1958. She served her internship at the University Hospital in Little Rock and now has her office at 425 South Main in Stuttgart.

A new member of the Washington County Medical Society is **Dr. Joe C. Parker**. He is a native of Hot Springs and received his preliminary education at the University of Arkansas from which he received a B.S. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1959. Dr. Parker is a General Practitioner with his office at 130 North Spring in Springdale.

Dr. Archie L. Hewett is a new member of the Sebastian County Medical Society. A native of Little Rock, he received his preliminary education at Columbus College, New York, from which he received a B.A. degree. His M.D. degree was obtained from the University of Arkansas Medical School in 1955. Dr. Hewett's specialty is Urology. His office address is 522 South 16th in Fort Smith.

Sebastian County Medical Society reported a new member in February. He is **Dr. Eldon D. Pence** whose specialty is Internal Medicine. A native of Kansas City, Missouri, he received his preliminary education at Tulane University from which he received a B.S. degree. His M.D. degree was obtained from Tulane University in 1954. Dr. Pence served his internship in the U. S. Army from 1954-1955. His office is located at 320 North Greenwood in Fort Smith.

Boone County Medical Society reported a new member in February. He is **Dr. Wilson E. Roark** whose specialty is Internal Medicine. He is a native of Plainview, Texas, and received his preliminary education at North Texas State College in Denton. His M.D. degree was obtained from the Louisiana State University School of Medicine, New Orleans, in 1949. Dr. Roark practiced in Broken Bow, Oklahoma, from 1954-1956 and Jacksonville, Texas, from 1958-1960. His office is in Yellville, Arkansas.

Dr. C. E. Holcomb is a new member of the Mississippi County Medical Society. A native of Whitesburg, Kentucky, he received his preliminary education at the University of Kentucky, Lexington, from which he received a B.S. degree. He was graduated from the University of Louisville School of Medicine, Louisville, Kentucky in 1956. Dr. Holcomb practiced in Steele, Missouri, from 1957-1960. He is a General Practitioner with his office at 527 North 6th in Blytheville.

A new member of the Mississippi County Medical Society is **Dr. Edward L. Taylor**. He is a native of Vienna, Illinois, and

received his preliminary education at Memphis State University, from which he received a B.S. degree. His M.D. degree was obtained from the University of Tennessee College of Medicine in 1938. Dr. Taylor has practiced at his present location for one year. Before coming to Blytheville, he practiced in Steele, Missouri, 1940-1942; Air Force 1942-1946; Steele and Hayti, Missouri 1947-1956; and Memphis, Tennessee 1956-1959. He is a Radiologist with his office at Highland and Tenth in Blytheville.

Dr. Benjamin C. Hyatt is a new member of the Conway County Medical Society. A native of Hope, Arkansas, he received his preliminary education at Northwestern University, Evanston, Illinois, from which he received a B.S. degree. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1958. Dr. Hyatt practiced in Beaumont, Texas, from 1959-1960. His office is at the Community Health Clinic, in Perryville.

Woman's Auxiliary

The Hot Springs County Medical Auxiliary entertained for Malvern Senior High School girls at a tea in the home of Mrs. W. F. Barrier. Auxiliary officers receiving were Mrs. Russell Cobb, Mrs. Raymond McCray, Mrs. Doyle Wise, and Mrs. Barrier. Mrs. Olive Kyle presided at the punch bowl. Red carnations and candles in silver candelabra were used in the dining room. Approximately 70 guests called.

Officers elected for the new year by the Boone County Medical Auxiliary are Mrs. Ulys Jackson, president; Mrs. Kenneth Siler, vice president; Mrs. Wayne Jones, treasurer; Mrs. Rhys Williams, recording secretary; Mrs. Robert Langston, corresponding secretary; Mrs. Van Smith, historian; Mrs. J. G. Gladden, chaplain; and Mrs. Henry V. Kirby, parliamentarian.

The Women's Auxiliary to the Garland County Medical Society met in February at the home of Mrs. H. King Wade, Jr., with Mrs. C. E. Garrett, Mrs. Gaston Herbert and Mrs. Vernon Sammons as co-hostesses.

The president, Mrs. Robert F. McCrary, introduced the guest speaker, Mrs. Mason Lawson of Little Rock, representative of the Arkansas State Cancer Commission and a past national President of the Auxiliary to the American Medical Association.

During the business meeting plans were made to hold a dinner for the celebration of Doctors' Day. It was decided to make a donation to the Ilse F. Oates Student Loan Fund in honor of this occasion. Contributions were taken for the American Medical Education Fund.

Mrs. Shelby G. Gamble, wife of the Medical Director of the Hot Springs Rehabilitation Center was welcomed as a special guest.

Members of the Women's Auxiliary to the Bowie-Miller Medical Society were entertained in February with a coffee at the home of Mrs. W. D. Thornton. Hostesses were Mrs. Thornton, Mrs. Frank Cantrell, Mrs. Joe Tyson, Mrs. Harold Short, Mrs. W. D. Walker, and Mrs. Norman Peacock. Mrs. C. B. Holloway gave a program entitled "Hats on Parade". Some of the members brought and modeled hats that dated back to the 18th century.

Mrs. Lois Williams, public health nurse at Malvern, spoke to a group of senior girls at the Malvern high school in February about the advantages of nursing and medical career. The program was sponsored by the Hot Springs County Medical Auxiliary in an attempt to interest young women in medical and allied professions.

Mrs. Williams, a registered nurse and graduate of St. Vincent's School of Nursing, talked informally and then answered questions regarding different phases of the profession.

Mrs. Bruce Kersh was in charge of the program and Mrs. John W. Cole introduced the speaker. Other members of the

Auxiliary present were Mrs. C. F. Peters and Mrs. Russell Cobb.

The Garland County Medical Auxiliary sponsored "Medical Careers Night" in February at the Hot Springs High School. The program was open to all junior and senior high students accompanied by their parents. The committee in charge of arrangements included Mrs. Robert Atkinson, Mrs. Thomas Durham and Mrs. James French.

The Independence County Medical Society and Auxiliary met for their February meeting at the Marvin Hotel, Batesville, for dinner. After dinner Dr. and Mrs. T. W. Williams of Newport gave an interesting program on antique glass and porcelain and showed many pieces from their own collection. Following the program the Auxiliary adjourned to the home of Mrs. J. J. Monfort for a business meeting. Officers re-elected to serve another year were: president, Mrs. Glenn Keller; vice president, Mrs. Jim Lytle; secretary, Mrs. Charles Taylor; and treasurer, Mrs. Chaney Taylor.

Mrs. James O. Asher of the Blytheville Air Force Base entertained on February 8th with a morning coffee preceding the business meeting of the Mississippi County Medical Auxiliary. The table from which the refreshments were served was decorated in the red and white theme of Valentine. Mrs. William Bow served at the buffet. Mrs. Edward L. Taylor presided at the meeting and plans were made for a benefit bridge party to be given by the group.

Book Reviews

ATLAS OF OBSTETRIC TECHNIC, by J. Robert Willson, M.D., M.S., Professor of Obstetrics and Gynecology, Temple University School of Medicine, Philadelphia, Pa., Head of the Department of Obstetrics and Gynecology, Temple University Hospital, Philadelphia, Pa., Deluxe Edition, illustrated by Daisy Stilwell, pp. 301, published by The C. V. Mosby Company, St. Louis, Missouri, 1961.

This atlas consists mostly of illustrations but with an adequate text. It is exceedingly well done and seems to be entirely complete. No bibliography is present nor is it especially needed. This atlas is comparable in its field to Cutler and Zollinger's Atlas of Surgical Technic. It is recommended to medical students, interns and practicing physicians who have an interest in obstetrics. AK

APPLIED ANATOMY FOR NURSES. E. J. Bock, S.R.N., S.C.M., D.N., and R. Wheeler Haines, M.B., D.Sc., F.L.S. Second Edition. Pp. 314, illustrated, 1959. The Williams & Wilkins Company, Baltimore. \$4.25.

This small textbook of anatomy is written in a very readable style, and the illustrations are good. It is recommended as a teaching text of anatomy for nurses or for hygiene courses of students from high school level on. AKJ

TUBERCULOSIS ABSTRACTS

Sponsored by
The Arkansas Tuberculosis Association

SURGERY IN THE MANAGEMENT OF PULMONARY TUBERCULOSIS

JOHN M. SALTER, Colonel, M.C., *Rocky Mountain Medical Journal*, August, 1960.

Resection is the surgical treatment of choice today. In a series of five hundred patients at Fitzsimons Army Hospital only five patients died following resection. Even with good drugs, surgery has a significant role in the management of tuberculosis.

The presently available highly effective anti-microbial agents, used singly or in combinations, are seemingly sufficiently specific to raise the question whether surgery in the treatment of pulmonary tuberculosis will always be necessary in countries with economic levels and medical advancements comparable to the United States. However, there are still many untoward factors and circumstances that prevent successful management without the aid of surgical measures.

Some of these factors and situations may be listed as follows: delay by the patient in seeking medical aid; diagnostic errors and incomplete evaluation by physicians and surgeons (such circumstances contribute to delay in proper treatment, thus contributing to the development of irreversible pulmonary lesions); economic

factors; uncooperative and recalcitrant patients; drug hypersensitivity unfavorably influencing medical management; inadequate dosage or duration of drug regimens; initial infection by or development of drug resistant mycobacteria; associated diseases such as silicosis and malignancy; improper or meddlesome use of potent hormonal agents such as corticotropins and corticosteroids; infection by unusual acid-fast strains or mutants (some not presently understood or fully evaluated, such as atypical chromogenic mycobacteria); the less commonly occurring relapsing lesions, and, of considerable consequence, the ever-present influence of mulcting or quackery.

SURGERY STILL IMPORTANT

Therefore, regardless of whether the ideal antituberculosis drug is developed in the near future, it seems logical to predict that surgical endeavors will play an important and significant role in a considerable percentage of therapeutic efforts in the management of pulmonary tuberculosis for at least two or three generations.

Since 1949 resection has steadily increased in popularity as a surgical procedure and now most thoracic surgeons and medical chest specialists are inclined to consider extirpative measures as the best surgical means of treating pulmonary tuberculosis. Primary extraperiosteal thoracoplasty, extraperiosteal plombage, and Monaldi drainage are always kept in mind but seldom employed. By and large, phrenemphraxis, pneumothorax, and primary pneumoperitoneum are procedures to be thought of and referred to only in terms of historical deference.

During the past five years the Thoracic Surgery Service at Fitzsimons Army Hospital has performed from 102 to 235 pulmonary and pleural resections each year in the treatment and diagnosis of tuberculosis.

The properly performed segmental resection for localized disease continues to be the procedure of choice and has been at this hospital since 1952. Wedge resections, by and large, should seldom be performed for proved tuberculous lesions; however, wedge removal may be utilized occasionally for small, well-localized peripheral lesions

incidental to the primary lobe or segmental resection.

INDICATIONS FOR SURGERY

When surgery is indicated after prolonged chemotherapy (four to eight months), our criteria for resection for the past four years has been essentially as follows: (1) cavitory lesions, unquestionably persistent; (2) cavitory residuals, open or closed, often referred to as "tuberculous abscess;" (3) large caseonodose residuals, 2 cm. or more in greatest diameter; (4) tuberculous bronchiectasis, severe and localized.

Resection is also called for for the following less commonly encountered lesions: (1) so-called "destroyed" lobe or lung, pre-operative pulmonary function studies must be done and properly evaluated; (2) chronic relapsing localizing disease; (3) persistently positive sputum; (4) progression of disease under apparently adequate chemotherapy; (5) atelectasis and/or tuberculous pneumonia; (6) bronchopleural fistulae, secondary to previous excisional surgery; (7) infarction of adjoining segment or subsegment after pulmonary resection; (8) the so-called salvage case, i.e., patients with extensive unilateral or bilateral disease with associated limited or poor pulmonary function, often persistently positive with resistant bacilli.

After relatively short periods of chemotherapy the indications for surgery are (1) solitary or multiple lesions, where diagnosis cannot be established; (2) pleural effusion; (3) relatively localized disease which is the suspected site of repeated gross bleeding; (4) mixed empyema, resulting after spontaneous pneumothorax associated with destroyed lung.

Excisional surgery in the management of pulmonary tuberculosis is never considered to be a simple or benign procedure. Five deaths have occurred in our last 500 patients who have had pulmonary and/or pleural resections for proved tuberculous lesions. Three occurred at or shortly after pulmonary resection. The two late deaths resulted from cor pulmonale. Thus, in this recent series of 500 patients, the present mortality is 1 per cent, 0.6 per cent being early operative deaths and 0.4 per cent late deaths.



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LOW MORTALITY RATE

At this time the mortality rate following pulmonary resection in the treatment of tuberculosis has reached a very low figure. Such is not true when untoward morbidity and complications are estimated after primary surgical measures, although most complications are of little consequence and easily corrected if recognized early and properly managed. Bronchopleural fistula, mixed empyema, operative wound infection, and postoperative spread or dissemination are decidedly on the decrease, thanks to better surgical techniques, ample blood to cover operative and postoperative losses, antimicrobial agents, and the proper timing of the primary operative procedure after complete evaluation of the patient as a whole and of such

important local pathologic states as the degree of healing of bronchoscopic viewable segmental bronchial orifices.

Presently we are discovering some of the direct causes of persistent postoperative lung surface leaks and are aware that postoperative infarctions occur much too frequently and may plague the thoracic surgeon. We are fortunate in that we are learning that proper early and aggressive management can cure and thus avert late and more serious complications which in years past often proved fatal.

By and large, we agree with those who contend that patients who harbor drug-resistant organisms and are candidates for excisional therapy should have lobectomy or pneumonectomy, thus avoiding segmental or wedge resections.

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 Champion, W. T. Stuttgart, WA 2-5241
 Drennen, S. A. Stuttgart, WA 2-3531
 Hestir, John M. DeWitt, WH 6-6255
 Hutchison, Joe E. DeWitt, WH 6-6521
 John, Milton C., Jr. Stuttgart, WA 2-1492
 McCracken, E. A. Stuttgart, WA 2-1372
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 Millar, Paul H. Jr. Stuttgart, WA 2-1492
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 Pritchard, Jack L. Stuttgart, WA 2-1601
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 Van Duyn, T. S. Stuttgart, WA 2-5112
 Whitehead, R. H. Jr. 6701 Hinkson Road, Little Rock, LO 5-5413
 Whitehead, R. H., Sr. DeWitt, WH 6-4610
 *Wilson, J. G. Keo

ASHLEY COUNTY

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 Harrison, R. H. Lewisville, WA 1-4222
 Lee, Willie J. Stamps, LE 3-4461

LAWRENCE COUNTY

Case, James W., Jr. Osage Beach, Missouri
 Cruse, E. J. Black Rock, TR 8-6209
 Elders, J. B. Walnut Ridge, TU 4-3162
 Gregory, Lloyd F. Walnut Ridge
 Joseph, Ralph Walnut Ridge, TU 4-3211
 Townsend, C. C. Walnut Ridge
 Whittington, J. J., III Walnut Ridge, TU 4-3552

LEE COUNTY

Carlton, Irwin L. 17 Woodcliff Circle, Little Rock
 Chaffin, C. W. Moro, RO 8-4434
 Dozier, Floyd S. Marianna, CY 4-2107
 Gray, Dwight W. Marianna, CY 4-3131
 Hays, Wm. C., Jr. Marianna, CY 4-2323
 McLendon, Mac Marianna, CY 4-2711
 Nowell, E. C. Marianna, CY 4-2616

LINCOLN COUNTY

Dixon, Charles W. Gould, CO 3-3412
 Freeland, James W. Star City, 221
 Gardner, Buford M. Poplar Bluff, Missouri
 Petty, Richard C. Star City, 4

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McPherson, Herbert A. Ashdown, TW 8-3306
 Peacock, N. W., Jr. Ashdown, TW 8-3306
 Shelton, Joseph G., Jr. Ashdown, TW 8-3306

LOGAN COUNTY

Center, W. B. State Sanatorium, OR 5-2121
 Flora, Wayne W. State Sanatorium, OR 5-2121
 *Henry, Cad A. State Sanatorium
 *Jewell, Iverson H. Paris
 Loveless, Donald E. Booneville, OR 5-2101
 McConnell, Samuel P. Booneville, OR 5-3232
 Riley, J. D. State Sanatorium, OR 5-2121
 Smith, Charles McD. Paris, 190
 Smith, James T. Paris, 190
 *Smith, John F. Paris

LONOKE COUNTY

Corn, F. A. Lonoke, OR 6-6563
 Gartman, J. F. Carlisle, LU 2-2596
 Good, Henry H. England, VI 2-2051
 Holmes, B. E. Lonoke, OR 6-6560
 McEntire, H. E. England, VI 2-3301
 Martin, J. A. Cabot, BA 4-9081
 Parker, Wm. M. DeValls Bluff, 4741
 Washburn, C. Yulan Cabot, BA 4-2141

MADISON COUNTY

Beeby, Charles B. Huntsville, 55
 Box, Ivan H. Huntsville, 231
 Smith, Austin C. Huntsville, 231

MILLER COUNTY

Baldrige, Max 721 Olive, Texarkana, 32-4241
 Barnes, Walter C., Jr. 401 East 5th, Texarkana, 23-2121
 Brown, J. Royston No. B Meadow Lane, Texarkana, 33-2111
 Burnett, J. W. 414 Hazel, Texarkana, 2-7301
 Cantrell, Frank P. 619 Main, Texarkana, 3-5173
 Daniel, N. B. 317 State Line, Texarkana, 32-8231
 Davis, E. L. 317 State Line, Texarkana, 32-8231
 Ellison, Eugene T. 619 Main, Texarkana, 3-5173
 Goel, Andrew G. 3301 Pine, Texarkana, 2-4702
 Good, Louis P. 5th and Hazel, Texarkana, 23-2121
 Griffin, John S. 619 Main, Texarkana, 3-5173
 Harrell, Wm. B., Jr. 317 State Line, Texarkana, 32-8231
 Harrison, James W. 401 E. 5th, Texarkana, 23-2121
 Hughes, Robert P. 401 E. 5th, Texarkana, 23-2121
 Jones, J. W. 401 E. 5th, Texarkana, 23-2121
 Kemp, K. H. 408 Hazel, Texarkana, 2-5181
 Kirkpatrick, R. R. 6th and Walnut, Texarkana, 22-0222
 Kittrell, J. B. Box 1453, Texarkana, 2-7922
 Laws, J. K. St. Michael's Hospital, Texarkana, 2-7297
 Leslie, Charles L. 315 E. 5th, Texarkana, 22-0231
 Lowe, Betty Ann 403 Hickory, Texarkana, 23-2121
 Middleton, B. C. 502 E. 12, Texarkana, 2-9344
 Murry, Harry E. 320 E. 5th, Texarkana, 22-1322
 Parson, George W. 401 E. 5th, Texarkana, 3-7226
 Pickett, R. W. 226 E. 6th, Texarkana, 2-5622
 Rodgers, N. L. 401 E. 5th, Texarkana, 23-2121
 Rushing, Louis U. 515 Olive, Texarkana, 32-6532
 Schneble, Richard J. 401 E. 5th, Texarkana, 23-2121
 Smith, Wm. D. 119 E. 6th, Texarkana, 22-0111
 Teasley, Gerald H. 401 E. 5th, Texarkana, 23-2121
 Thompson, Charles A. 619 Main, Texarkana, 3-5173
 Thornton, Wm. D. 619 Main, Texarkana, 3-5173

White, Luther R., Jr. 619 Main, Texarkana, 3-5173
Wicker, Eugene H. St. Micheal's, Texarkana, 23-2651
Wilhelm, Frieda McKinney, Texas
Williams, J. F. 220 W. 5th, Texarkana, 33-3032
Yarbrough, Charles P. 51B Hazel, Texarkana, 2-5472

MISSISSIPPI COUNTY

*Atkinson, Gean S. Blytheville
Ball, E. A. Blytheville
Beasley, Joe E. Blytheville, PO 3-3326
Blodgett, Don H. Wilson, 2411
Brownson, J. E. Tucson, Arizona
Cole, C. R. Blytheville, PO 3-7223
Elliott, J. Q. Blytheville, PO 3-4548
Ellis, N. B. Wilson, 2411
Fairley, Eldon Osceola, LO 3-2686
Fairley, Julian Osceola, LO 3-2686
Files, James B. Blytheville, PO 3-3552
Godley, M. L. Blytheville, PO 3-8118
Green, W. O., Jr. Blytheville, PO 3-6802
Hubener, L. L. Blytheville, PO 2-2021
Hubener, Louis F. Gainesville, Florida
Johnson, I. R. Blytheville, PO 2-2041
Johnson, R. L. Blytheville, PO 3-4526
Massey, Lorenzo D. Osceola, LO 3-4242
Osborne, Merrill Blytheville, PO 3-4564
Owen, Wm. M. 1600 Battery Street, Little Rock, FR 6-2279
Payne, Troy Blytheville, PO 3-4564
Polk, J. T. Keiser, 2692
Rainwater, W. T. Blytheville, PO 3-8118
Rhodes, R. F. Osceola, LO 3-2361
Rodman, T. N. Leachville, 99
Shaneyfelt, E. A. Manila, 340
Sims, Hunter, Jr. Blytheville, PO 3-8032
Sims, Hunter, Sr. Blytheville, PO 3-4458
Utley, F. E. Blytheville, PO 3-4575
Walls, James M. Blytheville, PO 3-6082
Webb, James Jackson Blytheville, PO 2-2131
Workman, W. W. 4900 Glenmere, North Little Rock, SK 3-4926

MONROE COUNTY

Dalton, M. L. Brinkley, 205
David, N. C., Jr. Brinkley, 992
Long, Jere L. Brinkley, 998
McKnight, Edward D. Brinkley, 48
Pupsta, Benedict F. Clarendon, 24
Stone, Herd E., Jr. Holly Grove, 2271
Walker, Walter L. Brinkley, 302
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NEVADA COUNTY

Avery, Charles D. Prescott, TU 7-2625
Cox, James E. Rosston, 2251
Hairston, Glenn G. Prescott, TU 7-2211
Harrell, L. J. Prescott, TU 7-2312
Hesterly, Charles A. Prescott, TU 7-2012
Hesterly, Jacob B. Prescott, TU 7-2012
Pool, Wm. B. H. Bodcaw, TU 9-2236

OUACHITA COUNTY

Byrd, E. J. 140 Van Buren St., N.W., Camden, TE 6-3200
Dalton, Perry J. 415 Hospital Dr., S.W., Camden, TE 6-5013
Dedman, J. L., Jr. 415 Hospital Dr., S.W., Camden, TE 6-5013
Drewery, L. E. 222 Van Buren St., N.W., Camden, TE 6-5058
Ellis, Wm. B. Stephens, ST 6-2551
Gossett, C. E. U. S. Navy
Guthrie, James 222 Van Buren St., N.W., Camden, TE 6-5058
Hawley, James W. 140 Van Buren St., S.W., Camden, TE 6-5710
Hearnsberger, Henry Stephens, ST 6-2811
Jameson, John B., Jr. 110 Harrison, S.W., Camden, TE 6-5088
Lewis, R. C. 623-A Adams, S.E., Camden, TE 6-5753
*McAlister, John P. Camden
Meek, Tom J. 415 Hospital Dr., S.W., Camden, TE 6-5013
Miller, John H. 109 Adams, Dr., S.E., Camden, TE 6-2890
Ozment, L. V. 110 Harrison Ave., S.W., Camden, TE 6-5088
Partee, Norf G. 223 Jefferson, S.W., Camden, TE 6-2339
Pruitt, Willard H. 108 Jefferson, S.E., Camden, TE 6-5744
Rhine, T. E. Thornton, 521-J2
Robins, R. B. 140 Van Buren, S.W., Camden, TE 6-3203
Robins, Rowland R. 105-A Adams, N.E., Camden, TE 6-2328
Thompson, John P. Bearden, 58

PHILLIPS COUNTY

Barrow, John H. Helena, HI 4-2622
Bell, L. J. Pat. Helena, HI 4-2163
Berger, A. A. Helena, HI 4-2781
Butts, James W. Helena, HI 4-2006
Capes, Bernard West Helena, JU 5-2621
Chrestman, R. L., Jr. Helena, HI 4-3294
Connolly, Wm. B. Helena, HI 4-3791
Ellis, Wm. A., Jr. Helena, HI 4-3037
Faulkner, Henry N. Helena, HI 4-7401
Hiatt, Wood C. Helena, HI 4-2622
Jones, Lynwood B. Helena, JU 5-2623
Kirkman, C. M. T. Helena, HI 4-2712
Kultgen, Edward Elaine, VA 7-3955
McCarty, C. P. Helena, HI 4-7401
Oldham, H. B. West Helena, JU 5-7581
Paine, W. T. Helena, HI 4-7401
Wise, James E., Jr. Marvell, 4901

POLK COUNTY

Campbell, C. A. Mena, 1246
Hefner, David P. Mena, 44
*Lee, F. A. Vandervoort
Norwood, Frank A. Address Unknown
Redman, Pierre Mena, 77
Rogers, Henry N. Mena, 44

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Wood, John P. Mena, 164

POPE-YELL COUNTY

Cale, Walter Atkins, MI 1-2384
Draeger, Louis A. Danville, HY 5-2252
Gardner, Ellis Russellville, WO 7-2242
Gardner, Lycurgus Russellville, WO 7-2242
Harris, Walter P. Danville, HY 5-2714
Henry, J. A. Russellville, WO 7-2345
King, Wm. Ernest, Jr. Russellville, WO 7-2345
Lane, Walter H., Jr. Dover, AC 8-3305
Linton, Arthur C. Hector, BU 4-3011
Lowrey, Douglas H. Russellville, WO 7-2156
Martin, Damon G. H. Danville, HY 5-2803
Millard, Roy I. Russellville, WO 7-2345
Mobley, Max James Russellville, WO 7-2242
McNamara, Wm. L. Russellville, WO 7-2841
Pennington, James O. Oia
Robertson, Tom D. Atkins, MI 1-7200
Stanford, John M. 15 Sherrill Hts., Little Rock
Tate, Alvie B. Russellville, WO 7-3600
Teeter, Brooks R. Russellville, WO 7-2345
*Underwood, E. O. Waveland
Webb, Lewis A. Dardanelle, CA 9-3525
Wilkins, Charles F., Jr. Russellville, WO 7-2345
Williams, David M. Russellville, WO 7-2156

PULASKI COUNTY

Abbott, Wm. Wood 1700 W. 13, Little Rock, FR 2-7502
Abercrombie, J. Scott Baptist Hospital, Little Rock, FR 4-3351
Adametz, J. H. Donaghey Bldg., Little Rock, FR 5-5547
Alford, Dale Meers Bldg., Little Rock, FR 5-0111
Allen, Hoyt R. Donaghey Bldg., Little Rock, FR 2-5518
Almaden, Philip J. 300 E. Roosevelt, Little Rock, FR 4-3331
Armstrong, Howard M. 12th and Bishop, Little Rock, FR 2-5626
Atkinson, Shelby 3833 Lockridge, North Little Rock, SK 3-4262
Ault, C. C. V. A. Hospital, North Little Rock, FR 2-8361
Autry, Daniel H. Donaghey Bldg., Little Rock, FR 6-1313
Baber, John C., Jr. Donaghey Bldg., Little Rock, FR 5-1268
Bailey, H. A. Ted, Jr. 1610 West 3rd, Little Rock, FR 2-1811
Baker, Charles R. 22 E. Spring, Fayetteville
Barker, James Donaghey Bldg., Little Rock, FR 5-6478
Barnhard, Fay M. 3006 No. Taylor, Little Rock, MO 6-7893
Barnhard, Howard J. 3006 No. Taylor, Little Rock, MO 6-7893
Barnes, Charles H. 401 South Cedar, Little Rock, MO 6-7714
Bauer, Frank M. 6th & Pulaski Sts., Little Rock, FR 5-8652
Bearden, James R. Ark. Baptist Hospital, Little Rock, FR 4-3351
Beccuet, N. J. 115 E. 5th, Little Rock, FR 5-4419
Bennett, B. A. State Hospital, Little Rock, MO 3-4123
Betts, Charles S. 5700-A West Markham, Little Rock, MO 3-9169
Beverly, Nolan F. 7320 Laurel Road, Little Rock, LO 5-2027
Bizzell, Ross Exchange Bldg., Little Rock, FR 6-2309
Black, Hal R., Jr. Donaghey Bldg., Little Rock, FR 2-7265
Black, H. Thurston Donaghey Bldg., Little Rock, FR 5-5292
Black, Millard W. 705 North Ash, Little Rock, MO 3-5413
Blakely, R. M. 106 E. Capitol, Little Rock, FR 2-1554
Bradburn, Curry B., Jr. Donaghey Bldg., Little Rock, FR 2-6300
Briggs, B. P. 1417 West 6th, Little Rock, FR 5-8206
Brinkley, Roy A. 1120 Marshall, Little Rock, FR 5-1177
Brizzolara, A. J. Donaghey Bldg., Little Rock, FR 2-6881
Brooksher, W. R., Jr. 318 Keightly Dr., Little Rock, MO 6-2951
Brown, H. L. 1905 Gaines, North Little Rock, FR 4-4692
Brown, Martha M. State Hospital, Little Rock, MO 3-4123
Brown, T. Duel 1120 Marshall, Little Rock, FR 4-1985
Brown, Willis E. Medical Center, Little Rock, MO 6-9461
Browne, Hugh A. Alexander
Buchanan, F. R. Donaghey Bldg., Little Rock, FR 4-5343
Buchman, Joseph A. 1302 West 6th, Little Rock, FR 5-6444
Burgess, T. E. 115 E. Capitol, Little Rock, FR 2-2733
Busby, John V. 5008 Kavanaugh, Little Rock, MO 4-1566
Byrd, Lucas M., Jr. 36 Lake Shore Dr., Little Rock, LO 5-6046
Calcote, Robert A. Donaghey Bldg., Little Rock, FR 4-5969
Calhoun, Joseph D. 5804 W. Markham, Little Rock, FR 6-1321
Caranahan, Robert G. State Hospital, Little Rock, MO 3-4123
Carruthers, F. Walter Donaghey Bldg., Little Rock, FR 5-3372
Cazort, Alan G. 4001 West Capitol, Little Rock, MO 4-1596
Chappell, Ewin S. Memphis, Tennessee
Cheairs, D. B. 721 West 2nd, Little Rock, FR 4-2272
Chesnutt, C. R., Sr. Boyle Bldg., Little Rock, FR 2-7536
Choate, Hoyt L. 1120 Marshall, Little Rock, FR 2-7032
Christeson, Wm. W. Donaghey Bldg., Little Rock, FR 6-2409
Christian, John D. 5520 W. Markham, Little Rock, MO 6-9431
Chudy, Amail 1703 Main, North Little Rock, FR 2-0119
Church, B. L. 321 Maple, North Little Rock, FR 4-7796
Clark, A. C. Donaghey Bldg., Little Rock, FR 2-7631
Clark, William A. Donaghey Bldg., Little Rock, FR 5-7228
Coffelt, Rosemary 216 W. Poplar, Jacksonville, YU 2-2323
Cohen, Louis A. 8 Amarillo Circle, Little Rock, MO 3-7542
Compton, John Nye Donaghey Bldg., Little Rock, FR 4-4636
Cook, Raymond C. 601 Scott, Little Rock, FR 5-8273
Cooper, William G. Donaghey Bldg., Little Rock, FR 4-6496
Cope, Ellis P. Donaghey Bldg., Little Rock, FR 4-8884
Cosgrove, K. W. 516 Scott, Little Rock, FR 4-6338
Craig, Marion S., Jr. Waldon Bldg., Little Rock, FR 5-2395
Crawley, Eugene H. Lansing, Michigan
Crews, James Travis 4316 W. Markham, Little Rock, MO 3-3121
Cross, J. B. 1120 Marshall, Little Rock, FR 5-0156
Crow, Jan W. 1000 W. Main, Jacksonville, FR 5-4182
Cull, S. T. W. 902 W. 2nd, Little Rock, FR 5-8073
Cullen, Phillip T. Donaghey Bldg., Little Rock, FR 4-1641
Cummins, Bryce 31 Broadmoor Dr., Little Rock, LO 5-7450
Davis, Malcolm W. V. A. Hospital, Little Rock, FR 2-8361
Dean, Gilbert O. Donaghey Bldg., Little Rock, FR 5-7784
Diddy, Hal Donaghey Bldg., Little Rock, FR 5-0244
Dillaha, Calvin J. Waldon Bldg., Little Rock, FR 6-1361
Diner, Wilma J. C. Medical Center, Little Rock, MO 6-9461
Dishongh, Howard A. Donaghey Bldg., Little Rock, FR 5-4436

Dodge, Eva F.	Medical Center, Little Rock, MO 6-9461	Laurens, John	501 North Hayes, Little Rock, MO 3-3351
Donahue, Hayden H.	State Hospital, Little Rock, MO 6-7615	Law, Ralph A.	6101 Kavanaugh, Little Rock, MO 3-1584
Donaldson, J. K.	101 West 24th, Little Rock, FR 2-7546	Lawson, F. Douglas	Medical Center, Little Rock, MO 6-9461
Downs, J. W.	4316 W. Markham, Little Rock, MO 6-5922	Lawson, Mason G.	701 W. Markham, Little Rock, FR 4-4311
Durham, James W.	Box 406, Jacksonville, FR 5-6771	Levy, Jerome S.	1425 W. 7th, Little Rock, FR 5-5521
Easley, Edgar J.	State Health Dept., Little Rock, FR 4-6361	Lilly, Kenneth E.	104 E. Broadway, North Little Rock, FR 2-3575
Ebert, Richard V.	Medical Center, Little Rock, MO 6-9461	Logue, Richard M.	Donaghey Bldg., Little Rock, FR 5-3372
Ellis, Joseph L.	Baptist Med. Arts Bldg., Little Rock, FR 2-7502	Longstreth, Alvin E.	1312 Fair Park, Little Rock, MO 3-5545
Ellis, Philip P.	Denver, Colorado	Lyons, Virgle E.	115 E. Broadway, North Little Rock, FR 2-5246
Eubanks, R. M.	12th and Bishop, Little Rock, FR 2-5626	McCaskill, Melvin R.	1429 W. 7th, Little Rock, FR 5-9167
Farris, Guy R.	810 West 2nd, Little Rock, FR 2-2281	McClain, Monroe D.	1120 Marshall, Little Rock, FR 5-4621
Fein, Norman N.	Waldon Bldg., Little Rock, FR 4-8441	McClintock, E. M.	5606 W. Markham, Little Rock, MO 3-6313
Fitzgibbon, Carney	410 S. Martin, Little Rock, MO 6-8861	McKelvey, M. A.	501 Woodlane, Little Rock, FR 4-7854
Fitzgibbon, Rodney	Columbia, South Carolina	McMillin, Lamar	1311 Louisiana, Little Rock, FR 4-6531
Fletcher, Elizabeth D.	Donaghey Bldg., Little Rock, FR 5-4436	McMillion, Stephen D.	104 E. Bdway, No. Little Rock, FR 2-3575
Foster, Julian L.	3901 New Benton H'way, Little Rock, LO 5-3316	McRae, Washington M.	819 Ridgecrest, Little Rock MO 3-8272
Fulmer, H. Ray	Donaghey Bldg., Little Rock, FR 5-9085	Mallory, George L.	111 Lynch Dr., North Little Rock, WI 5-9271
Fulmer, John M.	1610 West 3rd, Little Rock, FR 5-6042	Massie, Wm. J.	New Haven, Connecticut
Fulmer, Paul M.	2700 Izard, Little Rock, FR 4-1540	Mathis, Edwin F.	4601 Woodlawn, Little Rock, MO 3-8374
Fulmer, S. C.	2018 Wolfe, Little Rock, FR 5-8698	Means, Ben Dallas	4124 W. 11th, Little Rock, MO 3-0213
Fulton, William L.	513 Main, North Little Rock, FR 5-2433	Miller, Harold N.	Port Charlotte, Florida
Gann, Dewell	Benton	Milner, E. L.	623 Woodlane, Little Rock, FR 5-0039
Gates, Stanley M.	1809 Battery St., Little Rock, FR 5-2565	Molholm, Hans B.	State Hospital, Little Rock, MO 3-4123
Gay, Ellery C. Jr.	Donaghey Bldg., Little Rock, FR 5-0175	Morgan, Frank E.	22 Pine Tree Loop, No. Little Rock, SK 3-2076
Gay, Ellery C., Sr.	Donaghey Bldg., Little Rock, FR 5-0175	Morris, Woodbridge E.	1710 West 10th, Little Rock, FR 5-7379
Gibbins, Jack C.	2309 Durwood, Little Rock, MO 6-8712	Morrison, James R.	Donaghey Bldg., Little Rock, FR 6-1814
Gillespie, A. Tharp	5512 W. Markham, Little Rock, FR 2-2125	Murphy, Horace R.	4300 W. Markham, Little Rock, MO 6-9494
Gillespie, E. Clark	5606 W. Markham, Little Rock, MO 3-6313	Murphy, James E., Jr.	116 E. 3rd, North Little Rock, FR 5-0561
Goode, Delmar	6318 Greenwood Rd., Little Rock, MO 6-6962	Napper, George S.	513 Main, North Little Rock, FR 5-2433
Gordon, Vida H.	2616 Kavanaugh, Little Rock, MO 3-1994	Nettles, John B.	Medical Center, Little Rock, MO 6-9461
Goss, Joseph J.	V. A. Hospital, North Little Rock, FR 2-8361	Nicholson, Hayden C.	New York City, New York
Gould, David M.	Denver, Colorado	Nisbett, James M.	Veterans Hospital, Little Rock, FR 4-3331
Graham, G. Grimsley	5800 W. Markham, Little Rock, MO 4-2660	Nixon, Ewing M.	Donaghey Bldg., Little Rock, FR 5-2446
Graupner, Kathryn I.	1305 Welch, Little Rock, FR 4-9597	Norton, Joseph A.	Donaghey Bldg., Little Rock, FR 6-1814
Gray, Edwin F.	Donaghey Bldg., Little Rock, FR 6-1321	Nowlin, Walter A.	Roland, TO 8-5116
Gray, Herschel F.	413 Scott, Little Rock, FR 5-6416	Oates, Charles E.	305 W. Scenic Rd., No. Little Rock, SK 3-3347
Gray, Oscar, Jr.	U. S. Navy	Oates, Gordon P.	1710 W. 10th, Little Rock, FR 4-9332
Grayson, Wm. B.	V. A. Hospital, North Little Rock, FR 2-8361	O'Connor, Patricia Ann	State Health Dept., Little Rock, FR 4-6361
Greutter, John E., Jr.	Donaghey Bldg., Little Rock, FR 2-6139	Ogden, Mahlon D.	1400 W. Capitol, Little Rock, FR 2-0035
Growdon, James H.	Medical Center, Little Rock, MO 6-9461	O'Neal, Walter H.	1120 Marshall, Little Rock, FR 5-1177
Hall, Alastair D.	306 Chester, Little Rock, FR 6-2348	Orr, William S.	Donaghey Bldg., Little Rock, FR 2-7740
Hamilton, Wilburn M.	Donaghey Bldg., Little Rock, FR 4-8633	Padberg, Frank T.	Waldon Bldg., Little Rock, FR 5-5866
Hanchey, C. C.	V. A. Hospital, North Little Rock, FR 2-8361	Panos, Theodore C.	Medical Center, Little Rock, MO 6-9461
Hara, Masauki	Medical Center, Little Rock, MO 6-9461	Parsons, V. Earl, Jr.	Burlington, Iowa
Hardeman, Daniel R.	1014 W. 3rd, Little Rock, FR 2-4684	Pearson, Earle W.	1119 Bishop, Little Rock, FR 4-3716
Hardin, Joe H.	1425 W. 7th, Little Rock, FR 5-5521	Peters, John E.	Medical Center, Little Rock, MO 6-9461
Harrel, J. A., Jr.	4601 Woodlawn, Little Rock, MO 3-8374	Phillips, Bert L.	1403 Main, North Little Rock, FR 6-2840
Harrison, A. Vale	Waldon Bldg., Little Rock, FR 4-3815	Phillips, Samuel	Donaghey Bldg., Little Rock, FR 4-9534
Hawkins, W. B.	V. A. Hospital, North Little Rock, FR 2-8361	Phipps, Woodrow E., Jr.	108 E. 4th, No. Little Rock, FR 4-4047
Hawley, Harold B.	8818 Fourche Road, Little Rock, LO 5-2314	Pierce, John A.	Medical Center, Little Rock, MO 6-9461
Hayes, Donald	Donaghey Bldg., Little Rock, FR 4-0219	Pinnell, Robert	Highway 10, Little Rock, MO 4-1473
Hayes, J. Harry, Jr.	New York City, New York	Pool, Chalmers S.	3925 N. Lookout, Little Rock, MO 3-9352
Hayes, J. Harry, Sr.	Donaghey Bldg., Little Rock, FR 4-0219	Porter, James O., Jr.	5512 W. Markham, Little Rock, FR 2-2125
Headstream, James W.	Waldon Bldg., Little Rock, FR 5-0264	Porter, William I.	Donaghey Bldg., Little Rock, FR 5-5547
Hefley, Bill F.	4001 W. Capitol, Little Rock, MO 4-1596	Powell, Charles B.	4300 West Markham, Little Rock, MO 6-9494
Henker, Fred O., III	9 Belmont Drive, Little Rock, LO 5-7260	Pringos, Andrew A.	Nat'l Old Line Bldg., Little Rock, FR 5-3231
Henry, Charles R.	Donaghey Bldg., Little Rock, FR 2-5841	Raney, Thomas J., Jr.	924 Marshall, Little Rock, FR 6-1375
Henry, John Forrest, Jr.	516 Scott, Little Rock, FR 4-6338	Reagan, Grady W.	Donaghey Bldg., Little Rock, FR 2-6300
Henry, Robert L., Jr.	810 W. 2nd, Little Rock, FR 5-6449	Reagan, Luther D.	Donaghey Bldg., Little Rock, FR 4-1702
Herron, John T.	State Health Dept., Little Rock, FR 4-6361	Reaves, B. J.	Donaghey Bldg., Little Rock, FR 5-8956
Hickey, Joseph P.	P.O. Box 2856, Little Rock	Reed, Ewing C., Jr.	1119 Bishop, Little Rock, FR 4-3716
Higgins, Homer A.	Winter Park, Florida	Reese, Wm. G.	Medical Center, Little Rock, MO 6-9461
Hill, Harlan H.	1120 Marshall, Little Rock, FR 2-7032	Regnier, George G.	Donaghey Bldg., Little Rock, FR 6-1814
Hip, Harold	300 E. Roosevelt, Little Rock, FR 4-3331	Rhinehart, Barton A.	Donaghey Bldg., Little Rock, FR 4-3194
Hollenberg, Henry	Waldon Bldg., Little Rock, FR 5-2321	Rhinehart, Wm. J.	11 Shannon Drive, Little Rock, FR 6-1814
Hollitt, George F.	2800 S. Hayes, Little Rock, LO 5-8261	Richardson, Robert E.	Donaghey Bldg., Little Rock, FR 5-3224
Hollis, J. W.	St. Vincent's Infirmary, Little Rock, MO 6-5421	Richmond, Samuel V.	Donaghey Bldg., Little Rock, FR 2-5101
Hollis, N. T.	Waldon Bldg., Little Rock, FR 4-4161	Riegler, Henry C.	1024 Scott, Little Rock, FR 5-3325
Hollister, Lloyd G.	223 Main, Little Rock	Riegler, Nicholas W., Jr.	1024 Scott, Little Rock, FR 5-3326
Holmes, Harlan C.	Baptist Med. Arts Bldg., Little Rock, FR 2-5040	Riegler, Nicholas W., Sr.	1024 Scott, Little Rock, FR 5-3326
Holt, L. G.	Donaghey Bldg., Little Rock, FR 4-8806	Riegler, Vea J.	7108 Rockwood Road, Little Rock, MO 3-1721
Honeycutt, Thomas D.	509 Cross, Little Rock, FR 6-1116	Riggin, John T.	Medical Center, Little Rock, MO 6-9461
Hood, Robert H.	Benton, SP 8-2572	Ritchie, E. J.	1401 Main, North Little Rock, FR 2-5253
Hoover, Paul W.	1120 Marshall, Little Rock, FR 4-0789	Robinson, J. M.	Raines Bldg., Little Rock, FR 2-0351
Howard, John G., Jr.	501 Woodlane, Little Rock, FR 5-9526	Rodgers, Clyde D.	1429 W. 7th, Little Rock, FR 5-9167
Hudgins, Paul T.	Medical Arts Bldg., Little Rock, FR 2-7502	Rosenbaum, Carl A.	Donaghey Bldg., Little Rock, FR 2-5101
Hundley, John M.	412 Cross, Little Rock, FR 5-5338	Ross, Robert W.	4316 W. Markham, Little Rock, MO 3-3121
Hyatt, David T.	Donaghey Bldg., Little Rock, FR 2-7741	Ross, S. Wm.	Medical Center, Little Rock, MO 6-9461
Ish, G. W. S., Sr.	Century Bldg., Little Rock, FR 2-7025	Rother, Frances C.	State Health Dept., Little Rock, FR 4-6361
Jackson, Morris A.	616 1/2 W. 9th, Little Rock, FR 4-7940	Samuel, John M.	805 W. 4th, Little Rock, FR 5-6468
Jansen, G. Thomas	Waldon Bldg., Little Rock, FR 6-1361	Sanderlin, Joseph H.	Donaghey Bldg., Little Rock, FR 5-7228
Johnson, Glenn H.	Donaghey Bldg., Little Rock, FR 2-0508	Schneider, Mildred F.	V. A. Hospital, No. Little Rock, FR 2-8361
Johnson, J. A.	112 N. Bailey, Jacksonville, FR 5-6771	Schultz, Bruce E.	3423 Pike Ave., No. Little Rock, SK 3-6616
Johnston, Thomas G.	4001 W. Capitol, Little Rock, MO 4-1596	Schwander, Howard	1119 Bishop St., Little Rock, FR 5-0740
Jones, Bryant W.	Waldon Bldg., Little Rock, FR 5-0264	Schwarz, W. J.	Donaghey Bldg., Little Rock, FR 4-4712
Jones, Granville L.	State Hospital, Little Rock, MO 3-4123	Scruggs, Joe B., Jr.	Baptist Hospital, Little Rock, FR 4-3351
Jones, H. Fay H.	Donaghey Bldg., Little Rock, FR 2-7265	Selakovich, Walter G.	5703 W. Markham, Little Rock, MO 3-3954
Jones, James E.	Donaghey Bldg., Little Rock, FR 2-4681	Sessoms, William D.	Sherman Oaks, California
Jones, Kenneth G.	4300 W. Markham, Little Rock, MO 6-9494	Shafer, Cecil W.	Medical Center, Little Rock, MO 6-9461
Jones, Robert D.	Waldon Bldg., Little Rock, FR 5-2321	Shatavsky, Melvin	V. A. Hospital, Little Rock
Juniper, Kerrison, Jr.	209 Wedgewood, Little Rock, MO 3-1491	Shaw, E. J.	State Hospital, Little Rock, MO 3-4123
Junkin, Ruth	V. A. Hospital, North Little Rock, FR 2-8361	Shipp, Harvey D.	Donaghey Bldg., Little Rock, FR 5-3224
Kahn, Alfred, Jr.	1300 W. 6th, Little Rock, FR 4-8847	Shuffield, H. Elvin, Sec'y	Donaghey Bldg., Little Rock, FR 5-2446
Kennedy, Charles H.	115 Ark-Mo H'way, No. Little Rock, SK 3-9464	Shuffield, Joe F.	Donaghey Bldg., Little Rock, FR 5-2446
Kilbury, M. J., Jr.	Donaghey Bldg., Little Rock, FR 4-9443	Simmons, Nolan L.	623 Beech, Little Rock, MO 6-5555
Kilbury, M. J., Sr.	Donaghey Bldg., Little Rock, FR 2-7740	Simpson, N. Henry, Jr.	Donaghey Bldg., Little Rock, FR 5-2801
Kirby, Jesse M.	625 Beech, Little Rock, MO 3-6030	Smith, Huie H.	1517 Main, North Little Rock, FR 4-7011
Kolb, Agnes	924 Marshall, Little Rock, FR 6-1375	Smith, James L.	623 Woodlane, Little Rock, FR 4-6491
Kolb, B. T.	924 Marshall, Little Rock, FR 6-1375	Smith, John McC.	4000 Woodlawn, Little Rock, MO 6-6570
Kolb, William Payton	1120 Marshall, Little Rock, FR 2-3325	Smith, John W.	1415 W. 6th, Little Rock, FR 4-1622
Kreth, K. M.	Donaghey Bldg., Little Rock, FR 4-1598	Smith, Mose, III	2815 N. Pierce, Little Rock, MO 3-4946
Kumpuris, Frank G.	Waldon Bldg., Little Rock, FR 5-3212	Smith, Purcell, Jr.	4001 W. 5th, Little Rock, MO 4-1596
Kuperman, Irving	5300 Mabelvale Pike, Little Rock	Smith, W. Myers	3421 A Pike St., North Little Rock, SK 3-3661
Kuykendall, Sam J.	Donaghey Bldg., Little Rock, FR 2-7612	Snodgrass, W. A., Jr.	Donaghey Bldg., Little Rock, FR 4-2326
Laman, John E.	1911 Main, North Little Rock, FR 6-1389	Sparks, Albert R.	1120 Marshall, Little Rock, FR 5-4621
Lamb, Wm. A.	4001 W. 11th, Little Rock, MO 3-1452	Spitzberg, I. J.	Waldon Bldg., Little Rock, FR 2-3670
Landy, Jerome J.	415 N. Hayes, Little Rock, MO 3-5802	Spurny, Otto M.	Kansas City, Missouri
Langston, Harold D.	Ark. Baptist Hospital, Little Rock, FR 4-3351	Stainfor, Robert M.	Donaghey Bldg., Little Rock, FR 5-4188
		Stathakis, John	Veterans Adm'n, North Little Rock, FR 2-8361

Steele, W. L. 5520 W. Markham, Little Rock, MO 6-9431
 Stewart, Bill Dave Waldon Bldg., Little Rock, FR 5-3212
 Stover, A. R. Holbrook, Arizona
 Strauss, Alvin W., Jr. Waldon Bldg., Little Rock, FR 2-1828
 Stroope, George F. 4117 Ark-Mo H'way, N. Little Rock, SK 3-3487
 Stuckey, James G., Jr. Donaghey Bldg., Little Rock, FR 5-5653
 Taylor, James S. Medical Center, Little Rock, MO 6-9461
 Thomas, Peter O. Donaghey Bldg., Little Rock, FR 4-5703
 Thomas, Philip E. Boyle Bldg., Little Rock, FR 2-7732
 Thompson, Dola S. 2 South Road Terrace, Little Rock, MO 6-8782
 Thompson, Ewell I. Donaghey Bldg., Little Rock, FR 2-2089
 Thompson, George D. 5617 Kavanaugh, Little Rock, MO 3-0117
 Thompson, Lawrence L. Waldon Bldg., Little Rock, FR 4-0888
 Thompson, Samuel B. 5520 W. Markham, Little Rock, MO 6-9431
 Thorn, Garland Max 4117 Ark-Mo Hwy., N. Little Rock, SK 3-3487
 Tolbert, Louis E., Jr. Donaghey Bldg., Little Rock, FR 5-0520
 Toombs, Vernon L. 1417 W. 6th, Little Rock, FR 5-8206
 Vinzant, John W. 22 E. Spring, Fayetteville
 Wallace, Deane D. Donaghey Bldg., Little Rock, FR 5-6478
 Wallis, Charles D. 810 W. 2nd, Little Rock, FR 5-6449
 Walt, James R. Donaghey Bldg., Little Rock, FR 5-4869
 Ward, Joseph P. 1120 Marshall, Little Rock, FR 2-7502
 Warden, J. R. Donaghey Bldg., Little Rock, FR 4-4063
 Warford, Walton R. 3737 Lakeshore, North Little Rock, SK 3-4193
 Washburn, A. M. State Health Dept., Little Rock
 Wassell, John R. 5305 Kavanaugh, Little Rock, MO 4-1525
 Watkins, Charles J. Donaghey Bldg., Little Rock, FR 6-1003
 Watkins, John G., Jr. Donaghey Bldg., Little Rock, FR 2-7026
 Watson, C. Fletcher Donaghey Bldg., Little Rock, FR 2-7513
 Watson, Robert Donaghey Bldg., Little Rock, FR 5-5547
 Webb, V. T. 701 W. Markham, Little Rock, FR 4-4311
 Wells, Travis L. Donaghey Bldg., Little Rock, FR 5-7121
 Wenger, Carl E. 721 W. 2nd, Little Rock, FR 4-2272
 Weny, N. F. 287 Goshen Park, North Little Rock, SK 3-9003
 Westermann, Norman F. Medical Center, Little Rock, MO 6-9461
 White, Oba B. Century Bldg., Little Rock, FR 4-3609
 Wickard, Charles P. 1429 W. 7th, Little Rock, FR 5-9167
 Wilbur, E. Lloyd Ark. Baptist Hospital, Little Rock, FR 4-3351
 Wilkes, Elbert H. 5800 W. Markham, Little Rock, MO 4-3733
 Williams, C. Ray 6 Riviera Circle, Little Rock, MO 3-3621
 Willson, James D. 5300 Mabelvale Pike, Little Rock, LO 5-5810
 Winn, Charles R. 2813 Arch, Little Rock, FR 5-9231
 Woods, Jesse B. 800 1/2 W. 9th, Little Rock, FR 4-4192
 Wortham, Thomas H. 1000 W. Main, Jacksonville, FR 5-4182
 *Wortham, James T. Little Rock
 Wright, Paul O. 301 Country Club, North Little Rock, SK 3-8457
 Young, Wm. O. 112 1/2 E. 7th, Little Rock, FR 4-8656
 Zell, Lawrence M. Donaghey Bldg., Little Rock, FR 4-5158

RANDOLPH COUNTY

Baltz, M. A. Pocahontas, TW 2-3111
 *Brown, John W. Pocahontas
 DeClerk, T. B. Pocahontas, TW 2-3344
 Hamil, W. E. Pocahontas, TW 2-5815
 Scott, William W. Pocahontas, TW 2-3371
 Smith, Norman K. Pocahontas, TW 2-3387
 Wright, John L. Poplar Bluff, Missouri, SU 5-5782

SALINE COUNTY

Ashby, John W. Benton, SPB 4511
 Bell, William K. Jonesboro, WE 2-9183
 Bethel, James C. Bauxite, SP 5-5435
 Blakely, M. M. Benton, SP 8-2906
 Buffington, T. E. Benton, SP 8-2006
 Hogue, F. Paul Benton, SPB 4511
 Jones, Curtis W., Jr. Benton, SP 8-2722
 Jones, Curtis W., Sr. Benton, SP 8-2722
 Thorn, H. B., Jr. Benton, SP 8-4511
 Walton, Charles R. Montgomery, Alabama, AM 4-7389
 Wright, John D. Benton, SP 8-4341

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 Wright, Harold B. Waldron, ME 7-6311

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 Adams, W. F. 100 S. 14th, Fort Smith, SU 3-1183
 Allen, George W. 320 N. Greenwood, Fort Smith, SU 2-4877
 Amis, J. W. 602 Garrison, Fort Smith, SU 2-9869
 Bailey, Charles Wm. Greenwood, 4171
 Barta, Lloyd L. 922 Lexington, Fort Smith, SU 5-1447
 Bost, Roger B. 1400 South "D", Fort Smith, SU 3-0211
 Boulden, Cecil F., Jr. 100 S. 14th, Fort Smith, SU 3-1183
 Brooksher, W. R. 318 No. Greenwood, Fort Smith, SU 3-4803
 Chamberlain, C. T. 1500 Dodson, Fort Smith, SU 2-4092
 Chamblin, Don W. 1500 Dodson, Fort Smith, SU 2-4092
 Cotton, Stonie R. Dallas, Texas
 Crigler, Ralph E. 1500 Dodson, Fort Smith, SU 2-4092
 Darnall, Harley C. 500 Lexington, Fort Smith, SU 2-4850
 Dorsey, H. C. Coffeyville, Kansas, CL 1-0393
 Downs, Ralph A. 522 So. 16th, Fort Smith, SU 3-3146
 Eberle, Walter G. 1608 North "A" St., Fort Smith, SU 3-7238
 Edwards, M. Delmar 1323 North 9th, Fort Smith, SU 3-7175
 Faier, S. Z. 1500 Dodson, Fort Smith, SU 2-4092
 Foltz, Thomas P. 500 Lexington, Fort Smith, SU 2-4051
 Foster, M. E. 100 S. 14th, Fort Smith, SU 3-1183
 Gardner, James D. 708 Lexington, Fort Smith, SU 2-1081
 Glenn, Clarence L. 1500 Dodson, Fort Smith, SU 2-4092
 Goldstein, D. W. 100 S. 14th, Fort Smith, SU 3-1183
 Goodman, R. C., Sr. 1500 Dodson, Fort Smith, SU 2-4092
 Hall, Charles W. Greenwood, 2421

Hawkins, Wright 100 S. 14th, Fort Smith, SU 3-1183
 Henry, Lewis M. 602 Garrison, Fort Smith, SU 2-7261
 Henry, Louise M. 602 Garrison, Fort Smith, SU 2-7261
 Henry, Morriss M. 602 Garrison, Fort Smith, SU 2-7261
 Hoge, Arthur F., Jr. 314 No. Greenwood, Fort Smith, SU 2-4066
 Hoge, Marlin B. 314 No. Greenwood, Fort Smith, SU 2-4066
 Hornberger, E. Z., Jr. 500 Lexington, Fort Smith, SU 3-3157
 Keck, H. M. 1605 Dodson, Fort Smith, SU 3-1300
 Kelsey, J. F. 500 Lexington, Fort Smith, SU 3-3101
 Kennedy, V. N. 1610 South "B" Street, Fort Smith, SU 3-4764
 Kirkpatrick, Hoyt, Jr. 1500 Dodson, Fort Smith, SU 2-4092
 Knight, W. E. 1500 Dodson, Fort Smith, SU 2-4092
 Koenig, A. S. 922 Lexington, Fort Smith, SU 5-1447
 Kramer, Ralph G. 603 Lexington, Fort Smith, SU 3-8917
 Krock, F. H. 1500 Dodson, Fort Smith, SU 2-4092
 Lambiotte, Louis O. 1500 Dodson, Fort Smith, SU 2-4092
 Lane, Charles S., Jr. 1214 North "B", Fort Smith, SU 2-6019
 Lockwood, Franklin M. 1500 Dodson, Fort Smith, SU 2-4092
 McCraney, H. C. 100 S. 14th, Fort Smith, SU 3-1183
 McDonald, H. P. 822 N. 9th, Fort Smith, SU 2-4833
 McEwen, Stanley R. 1214 North "B", Fort Smith, SU 2-6019
 McMinimy, Donald J. 1500 Dodson, Fort Smith, SU 2-4092
 Martin, Art B. 1500 Dodson, Fort Smith, SU 2-4092
 Mason, Roy 2413 Midland, Fort Smith, SU 3-2951
 Meador, Don M. 3911 North "O", Fort Smith, SU 3-1080
 Mendelsohn, Ernest A. 1500 Dodson, Fort Smith, SU 2-4092
 Moulton, E. C., Jr. 1214 North "B", Fort Smith, SU 2-6019
 Olson, John D. 1500 Dodson, Fort Smith, SU 2-4092
 Post, James M. 818 Lexington, Fort Smith, SU 3-3166
 ReMine, Phillip Gordon 100 S. 14th, Fort Smith, SU 3-1183
 Saviers, Boyd M. 1500 Dodson, Fort Smith, SU 2-4092
 Schirmer, Roy E. 100 N. 6th, Fort Smith, SU 2-2983
 Scott, M. H. 602 Garrison, Fort Smith, SU 3-8653
 Shearer, F. E. 1500 Dodson, Fort Smith, SU 2-4092
 Sherman, Robert L. 500 Lexington, Fort Smith, SU 3-3101
 Shermer, J. P. 623 S. 21st, Fort Smith, SU 3-1520
 Shippey, W. L. 612 S. 24th, Fort Smith, SU 3-7227
 Sims, Henry M. 608 No. Greenwood, Fort Smith, SU 3-4303
 Stanton, Wm. B. 310 No. Greenwood, Fort Smith, SU 3-0225
 Stevenson, J. Eugene 2229 South "Z", Fort Smith, SU 3-8408
 Stewart, J. B. 603 Lexington, Fort Smith, SU 3-8917
 Thompson, James B. 605 Lexington, Fort Smith, SU 2-6081
 Thompson, John Kenneth 100 S. 14th, Fort Smith, SU 3-1183
 Thompson, Robert J. 605 Lexington, Fort Smith, SU 2-6081
 Waddell, Pearl B. 1500 Dodson, Fort Smith, SU 2-4092
 Whittaker, L. A., Jr. 621 S. 21, Fort Smith, SU 3-5231
 Wilson, Carl L. 1500 Dodson, Fort Smith, SU 2-4092
 Wilson, Morton C. 1500 Dodson, Fort Smith, SU 2-4092
 Woods, William Merle Huntington, 58

SEVIER COUNTY

Callahan, Leroy DeQueen, JU 4-2022
 Dickinson, R. C. DeQueen, JU 4-2344
 Dickinson, Richard B. DeQueen, JU 4-2344
 Dickinson, Rodger C. DeQueen, JU 4-2344
 Hendricks, John S. Bandera, Texas
 Jones, Charles N. DeQueen, JU 4-2022
 Kimball, G. L. DeQueen, JU 4-2022
 Pullen, Wayne G. DeQueen, JU 4-2022

ST. FRANCIS COUNTY

Barr, Austin F. Forrest City, ME 3-4542
 Bradley, Adron M. Forrest City, ME 3-1243
 Chaffin, E. J. Hughes, ED 9-2373
 Cogburn, H. N. Forrest City, ME 3-1425
 Crawley, C. E. Forrest City, ME 3-1425
 Cuonzo, Richard A. Alexandria, Louisiana
 Laney, John Neal Forrest City, ME 3-2245
 McGinnis, Robert S. Hughes, ED 9-2373
 McPhail, George T. Forrest City, ME 3-1952
 Roy, J. Max Forrest City, ME 3-4133
 *Rush, J. O. Forrest City
 Sexton, Giles A. Forrest City, ME 3-2245

UNION COUNTY

Baker, A. J. 111 W. Peach, El Dorado, UN 3-5425
 Burton, George C. 427 W. Oak, El Dorado, UN 3-9173
 Cathey, A. D. 112 W. Peach, El Dorado, UN 3-4127
 Clark, James F. 524 W. Faulkner, El Dorado, UN 3-4267
 Clowney, A. R. 312 Thompson, El Dorado, UN 3-4101
 Cooper, James O. 514 W. Faulkner, El Dorado, UN 2-1363
 Cullins, John G. Wadsworth, Kansas, MU 2-2000
 Cyphers, C. D. 506 W. Faulkner, El Dorado, UN 2-3471
 Doren, Austin H. Smackover, PA 5-3381
 Dunn, Tom L. Hampton, 198
 Duzan, Kenneth R. 427 W. Oak, El Dorado, UN 2-1351
 Ellis, Jacob P. 430 S. W. Avenue, El Dorado, UN 3-7163
 Fincher, L. G., Jr. 427 W. Oak, El Dorado, UN 3-4175
 Fincher, L. G., Sr. 427 W. Oak, El Dorado, UN 3-4175
 Fitch, L. E. 427 W. Oak, El Dorado, UN 3-7217
 Harper, J. W. 425 W. Oak, El Dorado, UN 3-5135
 Henley, Paul G. 700 W. Faulkner, El Dorado, UN 3-9542
 Hill, Grady E., Jr. 430 S. W. Avenue, El Dorado, UN 3-7163
 Irby, Frank L. 316 Schuler Bldg., El Dorado, UN 3-7600
 Jameson, Sam G. 700 W. Faulkner, El Dorado, UN 2-1377
 Kennedy, Charles E. Smackover, PA 5-3741
 Kitchen, Delmas K. Chattanooga, Tennessee, MA 4-6303
 Landers, G. H. 318 Thompson, El Dorado, UN 2-4216
 McCall, Daniel Lawson, WO 2-2584
 McKinney, J. S. 427 W. Oak, El Dorado, UN 2-3415
 Mayfield, Hugh J. 427 W. Oak, El Dorado, UN 3-7430
 Moore, Berry L., Jr. 106 1/2 N. Washington, El Dorado, UN 3-4185
 Moore, Berry L., Sr. Masonic Temple, El Dorado, UN 3-4185
 Moore, Gene D. 101 4th, Huttig, WI 3-2241
 Munn, E. J. 314 Armstrong Bldg., El Dorado, UN 3-5731
 Murphy, Garland D., Jr. 304 E. Peach, El Dorado, UN 3-7128
 Murphy, Garland D., Sr. 304 E. Peach, El Dorado, UN 3-7128
 Murphy, Henry A. 403 W. Oak, El Dorado, UN 3-3866
 Murphy, Randolph 112 W. Peach, El Dorado, UN 3-4127
 Newton, William L. Smackover, PA 5-4771

Pinson, J. H., Jr. 312 N. Jefferson, El Dorado, UN 3-4101
Rainwater, W. S. 422 W. Oak, El Dorado, UN 3-5135
Riley, Warren S. 526 W. Faulkner, El Dorado, UN 3-4503
Sheppard, Jack M. 528 W. Faulkner, El Dorado, UN 3-7154
Sheppard, Julius K. 528 W. Faulkner, El Dorado, UN 3-7154
Thibault, Frank G. 1804 N. Madison, El Dorado, UN 3-7163
Tommy, Charles E. 412 N. Washington, El Dorado, UN 2-3411
Trinca, Peter J. 430 S. W. Avenue, El Dorado, UN 3-7163
Turnbow, R. L. 427 W. Oak, El Dorado, UN 2-3971
Warren, G. W. Smackover, PA 5-3471
Wharton, Joe B., Jr. 516 W. Faulkner, El Dorado, UN 2-4221
Wharton, Joe B., Sr. 516 W. Faulkner, El Dorado, UN 2-4221
White, D. E. Armstrong Bldg., El Dorado, UN 3-3712
Yocum, David M., Jr. 412 N. Washington, El Dorado, UN 2-3411

WASHINGTON COUNTY

Applegate, Stanley Springdale Clinic, Springdale, PL 1-4637
Arnold, Sidney W. Prairie Grove, VI 6-2321
Baggett, Jeff J. Prairie Grove, VI 6-2321
Baker, Donald B. 241 W. Spring, Fayetteville, HI 2-7341
Boyer, H. L. Lincoln, TA 4-1701
Brizzolara, Charles M. 5512 S. Grandview Rd., L. Rock MO 6-5977
Brown, Spencer H. 106½ W. Center, Fayetteville, HI 2-7307
Buckley, Carrie Dan, Jr. 241 W. Spring, Fayetteville, HI 2-6256
Buice, James W. 648 No. Garland, Fayetteville, HI 2-9314
Burnside, Wade W., Jr. 1749 N. College, Fayetteville, HI 3-3471
Butler, George Harrison 1031 N. College, Fayetteville, HI 2-6277
Butt, W. J. 316 W. Dickson, Fayetteville, HI 2-8217
Clark, LeMon 241 W. Spring, Fayetteville, HI 2-6255
DeLaney, Joseph P. Gainesville, Florida
DePalma, Anthony T. 1031 N. College, Fayetteville, HI 2-2002
Dodson, Charles D. 946 California Dr., Fayetteville, HI 3-3387
Dorman, John W. Springdale Clinic, Springdale, PL 1-4637
Edmondson, Charles T. 135 E. Emma, Springdale, PL 1-9236
Edmondson, Rogers P. 135 East Emma, Springdale, PL 1-9236
Fowler, W. A. 301 W. Mountain, Fayetteville, HI 2-5412
Gilbert, Allan A. Arcade Bldg., Fayetteville, HI 2-4761
Gordon, Frank N. 1137 Hillcrest Drive, Fayetteville, HI 2-5046
Gray, Thomas W. V. A. Hospital, Fayetteville, HI 2-7381
Greenhaw, James J. Springdale
Hall, Joe Bill 675 Lollar Lane, Fayetteville, HI 2-5386
Harrison, Andrew J. Springdale, PL 1-2806
Hathcock, P. L. W. Dickson & Block, Fayetteville, HI 2-7333
Hathcock, Loyce W. Dickson & Block, Fayetteville, HI 2-7333
Kaylor, Coy C. 212 N. College, Fayetteville, HI 2-4482
Leming, Howell 114 E. Spring, Fayetteville, HI 2-7291
Lesh, Ruth E. 221 N. College, Fayetteville, HI 2-5112
Lesh, Vincent O. 221 N. College, Fayetteville, HI 2-2201
McAllister, Max F. 118 E. Dickson, Fayetteville, HI 2-4011
McCutcheon, Frank B. Address Unknown
Martin, Harold E. 1673 N. College, Fayetteville, HI 2-4482
Mashburn, James D. 212 N. College, Fayetteville, HI 2-5377
Mock, William H. Prairie Grove, VI 6-2321
Moore, Arthur 675 Lollar Lane, Fayetteville, HI 2-5386

Murry, John Warren 106½ West Center, Fayetteville, HI 2-9312
Nettleship, Anderson 311 E. Prospect, Fayetteville, HI 2-9971
Nettleship, Mae B. 311 E. Prospect, Fayetteville, HI 2-9974
Ogden, Fred W. Cravens Bldg., Fayetteville, HI 2-7161
Patrick, James K. 241 W. Spring, Fayetteville, HI 2-6256
Power, John R. Springdale Clinic, Springdale, PL 1-4637
Richardson, Fount 316 W. Dickson, Fayetteville, HI 2-8217
Riggall, Cecil Spokane, Washington
Sacks, Wilma C. 873 California Blvd., Fayetteville, HI 2-5456
Siegel, Lawrence H. 1031 N. College, Fayetteville, HI 2-4471
Sisco, Friedman Springdale, PL 1-4579
Stocker, W. J. Paddock Bldg., Fayetteville, HI 2-5111
Walker, David L. Corner Block & Dickson, Fayetteville, HI 2-7335
Ward, Herbert Wendall 1018 Sunset, Fayetteville, HI 2-2217
Weddington, Ralph E. 350 Highland, Fayetteville, HI 2-8153
Wheat, Ed 130 N. Spring, Springdale, PL 1-5701
Wozencraft, W. L. 310 N. Fletcher, Fayetteville, HI 2-5526

WHITE COUNTY

Abington, Eugene H. Beebe, TA 8-5531
Adair, Thomas Lester Bald Knob, PA 4-3220
Allbright, Sam J. Searcy, CH 5-3473
Barnett, James C. Heber Springs
Bridges, Olen W. Searcy, CH 5-5811
Brown, A. R. Searcy, CH 5-3566
Davis, William L. Searcy, CH 5-356
Dodd, William Carroll Bald Knob, PA 4-3240
Dunklin, A. J. Searcy
Edwards, Hugh R. Searcy, CH 5-5811
Formby, Thomas A. Searcy, CH 5-3566
Hawkins, M. C., Jr. Searcy, CH 5-2441
Huddins, Albert H. Searcy, CH 5-5561
Jackson, C. W. Judsonia, RA 9-3435
Kinley, James D. Beebe, TA 8-5432
Rodgers, Porter R. Searcy, CH 5-5811
Sanford, Sloan M. Searcy, CH 5-2784
Short, Harold Beebe, TA 8-5561
Sloan, Dewey W. Beebe, TA 8-5472
*Sloan, J. R. Garner
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WOODRUFF COUNTY

Dungan, C. E. Augusta, FI 7-2481
Evans, R. H. Chatfield, ED 9-2583
Ferrari, Victor J. Augusta
Inman, Fred C., Jr. McCrory, 2841
Maguire, Frank C., Jr. Augusta, FI 7-2131
Maguire, Frank C., Sr. Augusta, FI 7-2131
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